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Anne Hutchinson stands convicted by Boston ministers in this illustration which appeared originally on p. 555, vol. 1, of Scribner's Popular History of the United States, *by William Cullen Bryant, Sydney Howard Gay and Noah Brooks (New York: Charles Scribner's Sons, 1897). (Photograph courtesy of the Rhode Island Historical Society, with permission from the Pawtucket Public Library.)*

"Childbirth-Travells" and "Spiritual Estates": Anne Hutchinson and Colonial Boston, 1634-1638

by Deborah Kuhn McGregor

Anne Hutchinson was indeed the "breeder and nourisher" of the theological division of Puritan Massachusetts which led to the Antinomian Controversy (1636-1638).[1] However, while historians have researched, documented and interpreted the Antinomian Controversy in Colonial Boston in great detail, they apparently have failed to see the vital connection between Anne Hutchinson's role as a theological adversary and her life as a "woman very helpful in the times of child-birth. . . ."[2] Her engagement as a midwife in the ritual of birth was part of her religious activity. In fact, Puritanism provided a world-view from which the reality of her daily life in general, and the biology and common culture of childbirth in particular, derived an ethos.[3]

The Antinomian Controversy was a religious dispute which obstensibly concerned scriptural interpretation and the practice of Puritanism. The discourse as it is recorded to have occurred among clergymen and magistrates dealt with the proper weighing of emphasis in theological interpretation. A high percentage of Bostonians sided with those known now as the Hutchinsonians. They argued that belief in a covenant of works to the exclusion of the covenant of grace prevailed among their adversaries. Likewise, the Armenians—as the Hutchinsonians (or Antinomians) called them—cited what they considered to be the over-emphasis on the covenant of grace among certain ministers. Although the argument was highly specific in many ways and almost technical in its religiosity, the controversy split the town, threatening political and social cohesion. For example, Governor

Winthrop eventually disarmed certain individuals associated with Anne Hutchinson because of his fear of violent uprising.[4]

Historians have studied the controversy extensively and continue to do so today.[5] In this essay I attempt to widen interpretation to include the midwifery of Hutchinson, including the theological disputes, as a factor as the conflict emerged. Today Western thought assumes a cosmic duality derived from the writings of Descartes in the seventeenth century. This view dichotomizes human existence through a perception of mind and body as separate entities.[6] Although the Puritans did not understand such a dichotomy, Cartesian thought influences modern historians to such a degree that scholarship often separates the history of past disease and epidemics from mainstream history. On the other hand, medical historians frequently have treated social and cultural conditions and changes as subsidiary, if not irrelevant, to their interests in the history of science and medicine. A review of the literature treating the life of Anne Hutchinson brings the limitations of the Cartesian dichotomy into relief. Mainstream historians—social, political, religious, for instance, or colonial—discuss Anne Hutchinson primarily as a theological figure, whose exile eminated from her heretical opinions. In contrast medical histories portray the Puritan woman as an early New World healer, and a well-known midwife in colonial Boston's first decade.[7]

Pertaining to the separation of mind and body, presentist blinders force an interpretation of Anne Hutchinson which distinguishes her spiritual activities from her birthing and healing activities. Puritans saw no such distinction. Her work with women in preparation for childbirth helped to initiate the first gatherings of her followers. Her ideas about religious belief and practice, in turn, originated to some degree in her experience attending births.

Cotton Mather called the joining of medical practice with spiritual guidance, "the angelic conjunction." In tune with this apt description doctors in the Colonial Massachusetts Bay were most often ministers who had acquired skills in healing to answer the needs of parishioners.[8]

Although Anne Hutchinson was not a physician, her skills did include treatment of sickness. Precise distinctions among midwifery, ministry and medical practice so clear today did not prevail in the seventeenth century. In his (for the most part retrospective) histories of the Antinomian Controversy, John Winthrop used metaphors of medicine to describe the theological activities of Anne Hutchinson among her followers.

> . . . this was ever their method (i.e. the Antinomians), to drop a little at once into their followers as they were capable, and never would administer their Physicke, till they had first given good preparatives to make it worke, and then stronger & stronger potions, as they found the Patient able to beare."[9]

Winthrop perceived her spiritual activities as indistinguishably intertwined with her guidance and assistance during birth as well as in the giving of medicines.

Unfortunately there is little direct evidence of the historical experience of childbirth in the seventeenth-century Massachusetts Bay colony.[10] In fact, even the sources describing Anne Hutchinson's midwifery are scant.[11] Nonetheless, close perusal of the sources from colonial Boston in the 1630s and 1640s discloses the importance of one specific birth during the Antinomian Controversy itself. The stillbirth of Mary Dyer's deformed infant happened just weeks previous to Hutchinson's first public appearance to answer charges in Newtown before Governor John Winthrop and the General Court in November of 1637. The news of the event and Hutchinson's part in it spread only months later in March, 1638, on the last day of her second series of interrogations. Winthrop recorded his reaction in several places and the details reveal the depth of his concern and the extent to which he interpreted the ritual and history of Mary Dyer's delivery as symbolic of the theological controversy.

I intend to go beyond an intellectual consideration of Hutchinson's theological dissent or a medical discussion of monster births in this essay. Using a context provided by social history, women's history and medical history, Anne Hutchinson's midwifery becomes an integral part of her dynamic and controversial presence in the Massachusetts Bay Colony. To make the connection between Anne Hutchinson as woman midwife and Anne Hutchinson as theological adversary discloses the intersection of the day-to-day life of the original New England Puritans with the intellectual and rational structure of Puritan theology.

When Anne Hutchinson first arrived in Boston in 1634, she had already given birth to fourteen children, twelve of whom survived. She had grown up in Lincolnshire (in southern England, East Anglia, where many of the New World Puritans originated) and had also spent some years in London as a child.[12] Her father had been a nonconformist preacher before his death when Anne was still a child. She had learned to read and write, presumably under his influence, and as an adult fell under the influence of Puritan beliefs.[13] Her

husband, William Hutchinson, had been a successful merchant in the village of Alford. Together they hoped to find a new home in colonial Massachusetts Bay.

In Boston, as in Lincolnshire, theology was the driving force to Anne Hutchinson's life. She cultivated friendships with ministers in England as well as in Boston; in fact, she had known John Cotton, Thomas Hooker and others before their migration to the New World. In addition to an extensive knowledge of the scriptures and Puritan theology, she had developed skills in assisting at births and in nursing sickness. During pregnancy and in childbirth, one task was the spiritual preparation of the woman. For example, John Cotton, a prominent minister in Boston, noted of Anne Hutchinson:

> . . . chiefly for that I heard shee did much good in our town, in womans meeting at Childbirth-Travells, wherein shee was not onley skilfull and helpfull, but readily fell into good discourse with the women about their spiritual estates.[14]

First appearing in 1644, John Winthrop's *A Short Story of the Rise, Reign and Ruine of the Antinomians, Familists & Libertarians* was somewhat defensive in tone, written for the English Puritans to explain the unrest in Boston during the Antinomian Controversy. Winthrop described the nexus of Hutchinson's power as residing in midwifery and her theological meetings, while at the same time asserted that she had plotted from the moment of her arrival to divide Boston.

> . . . then shee began to go to work, and being a woman very helpfull in the times of child-birth, and other occasions of bodily infirmities, and well furnished with means for those purposes, shee easily insinuated her selfe into the affections of many, and the rather because she was much inquisitive about their spiritual estates.[15]

As the Reverend Cotton's description indicates, Boston Puritans first welcomed Anne Hutchinson for both her religious devotion and for her midwifery and nursing skills. By 1637, however, the community of Boston was deeply divided along lines originating in Hutchinson's meetings in her home. Following the events of 1637 and 1638, the synod of religious leaders, the birth of Mary Dyer's "monster," the trial before the General Court and the examination before the Church of Boston, Winthrop came to characterize Anne Hutchinson's help in childbirth and sickness as the hand of the Devil and a guise for wrong opinions.

Because there is scanty documentation from Anne Hutchinson herself, the pattern of childbirth customs in the seventeenth century must provide historical clues to her practice of midwifery. It is important to consider patterns established by other instances of birth and female participation in the Old World to ascertain what Anne Hutchinson might have brought with her to the colony. When she arrived, she carried skills she had learned in Old England.[16]

Because childbirth is and has always been a female activity, historians have difficulty in determining the general patterns. Women for centuries left little record of their daily experience and, specifically, of their memories of giving birth or of their role as midwife. An examination of childbirth in the seventeenth-century Massachusetts Bay colony relies on incomplete evidence. As a portrait of historical midwifery emerges, limitations persist. The practice of midwifery varied from individual to individual. In addition, there is little detail of the experience of the birth-giving woman.

In an essay on the experience of childbirth in seventeenth-century England, Adrian Wilson offers the details of the ritual surrounding birth.[17] The ritual integrates the "natural" or biological process of birth into a cultural milieu, in our case Puritanism, where the ritual takes on even greater significance than the labor and delivery. Central to the ritual activity was the gathering of female kin and neighbors, to the exclusion of men. A special room was designated for lying in. The room was darkened, candles lit and a caudle—a special drink prepared for the duration of the labor—shared by all involved. Symbolically, the word *gossip* originated with this gathering of women who attended the birth and offered support to the woman in labor. This birthing ritual helped to create the community of women in preindustrial society.

Special qualities attended the role of midwife, including the preparation and administration of herbs.[18] In England in the seventeenth century, the publication of Culpepper's lists of plants and their medicinal uses illustrated the popularity of botanical cures. Native Americans also used herbal sources in medicine and influenced the practice among the colonists, helping the newcomers to recognize new plants as possible therapies.[19] While individual families often grew and prepared their own botanicals, undoubtedly the midwife guided them in the use of specific herbs.[20]

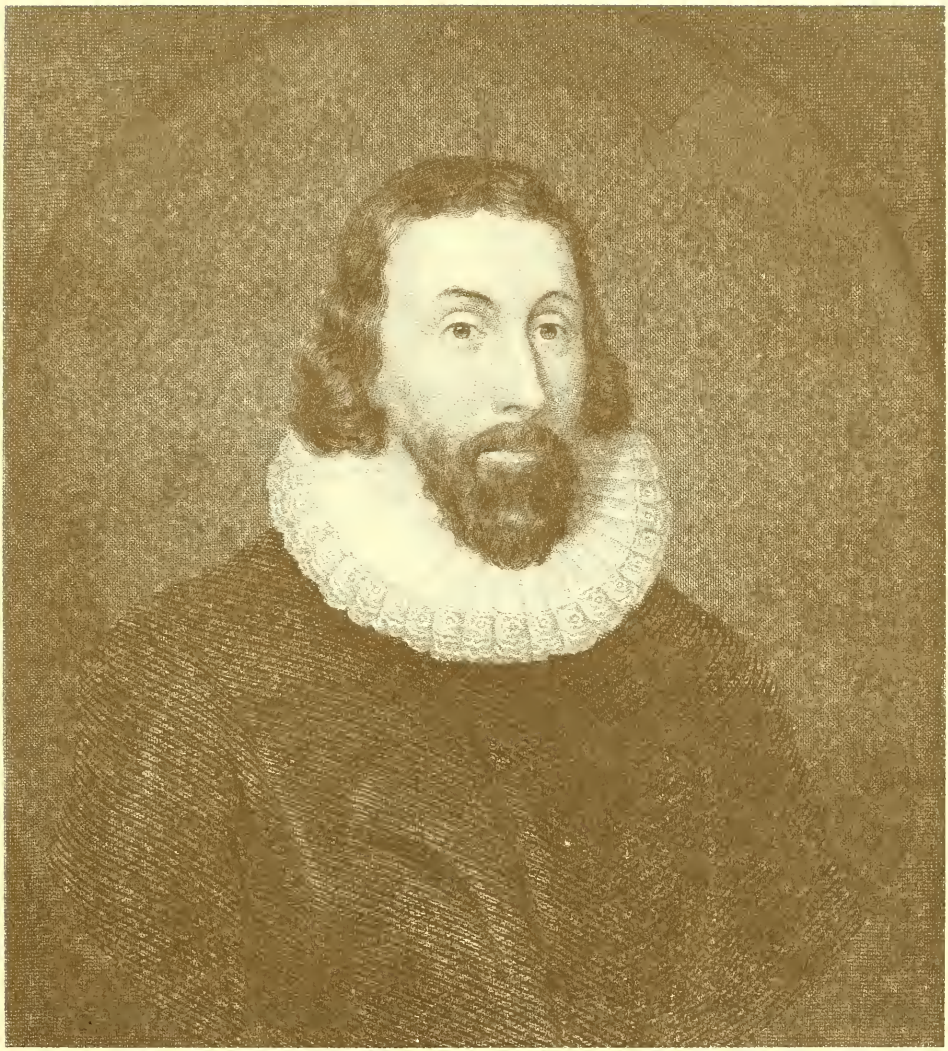
The midwife also stood out among the other women by virtue of her title, her authority in the lying-in chamber, her payment after delivery and her supervision of the ritual. As a rule, the physician only intervened at the midwife's request, during difficult labors, when the death of the infant and of

the mother were virtually foregone conclusions. In contrast, the midwife governed normal births in which infants were born alive. While Boston in its first decade possessed fewer physicians than Old England, there were men throughout Massachusetts—two Drs. John Clark and Dr. Thomas Oliver—who had studied medicine in England. We actually know much less about the historical presence of midwives and their apprenticeship with other midwives than we know about the number of physicians in the Bay Colony.[21] Anne Hutchinson was notable for her role as a midwife in the first decade of the Massachusetts Bay Colony.

Other aspects of childbirth ritual included the eventual opening of the lying-in chamber following the birth. The mother first sat up, during a period called "upsitting," and then received visitors after a period of confinement. Essential to the Anglican ritual was the churching of the woman who had given birth. She marked her first reappearance in the public and male world by a church-governed ritual of cleansing.[22] In England many Puritan women also participated in this activity. The midwife had the serious responsibility of baptizing the infant. Sometimes this included a special urgency, if the newborn seemed vulnerable to immediate death. The midwife then was mandated to secure baptism in order to protect the soul of the infant.[23]

Childbirth in seventeenth-century America was a communal event which women governed and shared. Women supervised the biological and cultural event, translating the male-dominated social, political and religious world-view into specific customs. The past also influenced their ritual—the oral tradition of midwifery passed on from generation to generation and the wisdom of magic and superstition which explained the process of gestation and birth. Although the communal and female pattern of ritual resembled the Old World culture, the structure of the New World Puritan theology also influenced the experience of childbirth in colonial Boston of the 1630s. A woman's preparation for childbirth was a preparation of piety, a spiritual readiness for her future suffering and death. Anne Bradstreet's poem to her husband, written in the 1630s, "Upon the Birth of One of Her Children" captures the anxiety and fear of death women experienced during pregnancy. "How soon, my dear, death may my steps attend. . . ."[24]

Death more commonly accompanied childbirth in the seventeenth century than it does today. Even more to the point, however, was the lack of effective intervention technique during a prolonged or stultified labor. The demography of seventeenth-century New England suggests that there was a relatively high rate of survival among all members of the population.[25] Especially compared to the colonial Chesapeake experience, members of the early Massachusetts



John Winthrop, Governor of the Massachusetts Bay Colony during Anne Hutchinson's tenure in Boston. (Photo reproduced from Robert C. Winthrop's Life and Letters of John Winthrop *(Boston: Ticknor and Fields, 1864), vi.*

Bay Colony had a reasonably good chance of living a full life. There were, however, periods of epidemics during which many died. Newborn infants were often very vulnerable to sudden death.[26] Without the assistance of the possible use of forceps or caesarean section, women knew that they too, or their neighbors, risked a painful and drawn-out death in the delivery of a child.

Preoccupation with death and suffering stemmed not only from the possibility of difficult labor and ensuing death. Nearly all inhabitants of the Massachusetts Bay Colony immigrated in order to practice Puritanism. In their religious faith, they were deeply concerned with life after death and the attainment of salvation. The quest for sanctification and justification in the eyes of God were at the heart of the individual's earthly existence, as they represented knowable signs of his/her potential election to eternal grace.

Childbirth customs in early Boston did not exist in isolation from Puritanism. A woman's preparation for labor and childbirth was an intensified preparation of piety, a spiritual readiness for her future suffering and death. In this context, Anne Hutchinson's skills were tremendously valuable. Not only did she have a physiological understanding of birth (which she acquired both as a mother and as a midwife), but she also offered a powerful and comforting rendering of Puritan theology. These capacities fused in her concern for the spiritual well-being of the individuals who came to her.

Scripture was the *sine qua non* of the early Puritan colonists. While women found in the Bible that childbirth was a fearful and life-threatening travail, they also found a prescription for prolific procreation. The work of pregnancy was spiritual preparation in hope of redemption.[27] Such spiritual preparation was important to every pious Puritan colonist; through close reading of Scripture and meditation, the individual struggled to reach sanctification, justification and, upon death, glorification. Because the Puritan God was inscrutable, acting in ways irreducible to human understanding, no individual could be certain he or she would win salvation after death. Thus God might inflict pain or death upon an individual as punishment for his depravity and sinfulness, yet the same individual, if he obeyed moral law and engaged in worship, might be among the chosen saints and achieve salvation. There was no certainty until the hour of death itself. Discomfort, anxiety and oscillation between feelings of assurance of election and the desperation of denial of membership among the saints typified the Puritan experience. The theological emphasis in childbirth served to maintain the woman's agonizing insecurity in the face of death and at the same time to ordain the pregnancy and labor as a time of spiritual preparation.[28]

John Cotton wrote of Anne Hutchinson that

> . . . she did much good in our Town, in womans meeting at Childbirth-Travells, wherein shee was not onely skilfull and helpfull, but readily fell into good discourse with the women about their spiritual estates. . . . so as these private conferences did well tend to water the seeds publikely sowen. Whereupon all the faithfull embraced her conference, and blessed God for her fruitfull discourses.[29]

Within herself, Anne Hutchinson harbored a religious confidence and an assurance of her own salvation. She described the process of her personal enlightenment midway through her appearance before the General Court in Newtown, Massachusetts, in November 1673.[30]

> The Lord knows I could not open scripture; he must by his prophetical office open it unto me. . . . I bless the Lord, He hath let me see which was the ministry and which was wrong. Since that time I confess I have been more choice and He hath let me to distinguish between the voice of my beloved and the voice of Moses, the voice of John Baptist and the voice of antichrist, for all those voices are spoken of in scripture. . . . Ever since that time I have been confident of what he hath revealed unto me.[31]

Hutchinson had found strength in her religious beliefs and sought to share this with women gathered in preparation for childbirth. Much of what she articulated in the recorded transcripts suggested diversion from literal translation of the scriptures. She attempted to address the conflict inherent in the Puritans' accepted belief in both the covenant of works and the covenant of grace. These covenants together urged the individual's submission to God's will and, in contrary fashion, suggested the potential benefit of individual action in the pursuit of salvation.

John Cotton, an eminent minister in Boston as well as Hutchinson's teacher, supported her in her religious doctrine for the three years before the controversy threatened to divide Boston. He too was disquieted by what he perceived to be an erroneous emphasis on the covenant of works.[32] Until the General Court ruled to end Hutchinson's meetings, many members of both the religious and political hierarchy upheld her status in the community, yet church elders and governmental magistrates found her to be ". . . the root of all these troubles."[33]

Ostensibly, the governing hierarchy ruled against Anne Hutchinson's continued gatherings because of the underlying theological dispute and the social disorder it created. The followers of Anne Hutchinson chastised, sometimes openly taunting, ministers, like Wilson, Bulkely and Shepard, for promulgating a belief in the supervening authority of the covenant of works—suggesting, for example, that Puritans should scour their lives for external signs of sainthood while engaging in the active pursuit of salvation.[34]

Scripturally, the covenant of works originated with Adam in the Garden of Eden. In exchange for a righteous and obedient life God rewarded man with salvation. After the fall of Adam and Eve, man had only the hope offered by the covenant of grace, offered to Abraham. This latter chance of salvation eminated from God's independent decision unknowable to man. While the covenant of grace reaffirmed possible eternal life to humankind, it denied the efficacy of good works per se as the source of grace. The appellation *antinomian* went back hundreds of years and designated those who while subscribing to the covenant of grace, seemed to deny the necessity of adherence to the moral law delineated by the original covenant. They were "outside the law," or *antinomian.* Winthrop labelled Hutchinson, Wheelwright and the others as such only in the 1640s.

John Cotton, John Wheelwright and Anne Hutchinson, along with the others, felt that the Reverend Wilson too heavily emphasized the importance of good works on earth as a way of gaining entrance to heaven. They called Wilson an Armenian (after a European religious sect with a similar emphasis on works), and disputed Wilson and his followers' search for visible signs of sainthood in the form of sanctification.

Winthrop, Wilson and other ministers argued that Anne Hutchinson and John Cottons' theology offered "a faire and easie way to heaven."[35] They were suggesting, so Wilson argued, that salvation had nothing to do with doing good here on earth and that one's earthly existence was no reflection of the judgment of God. By the time of the interrogation in the Church of Boston (March 1638), John Cotton and Anne Hutchinson were no longer allied. At this time Hutchinson articulated a belief that she had experienced an indwelling of God, a tangible certainty of grace. This statement was marked clearly as heresy by Cotton and others, and resulted in the exile of herself and followers.

When Winthrop called Hutchinson "the root of all these troubles," he alluded to medicine and botany as well as to theology—this time referring to the use of plant roots as medicine. Just as in the earlier quote, he saw her

opinions as "bad medicine"—"stronger and stronger potions, as they found the Patient able to bare."[36]

When Anne Hutchinson first arrived in Boston, she seemed to be a "ministering angel," a woman with abilities to help in sickness and childbirth. By 1638 she had become a seductive individual, a woman who poisoned with her medicines. Her success as a midwife was dependent upon her integration of theology with the administration of medicine. When she failed in one, she failed in the other, at least in Winthrop's mind. Her initial acceptance in Boston reflected her original strengths in both theology and medicine.

In fact, the polarity embodied in Anne Hutchinson's social status in Boston paralleled the polarities in the profession of midwife. The midwife alone possessed what knowledge and skill there was to facilitate the birth and ensure the lives of the mother and infant. However, what received either condemnation or approval was the spiritual cleanliness of the midwife, not her medical skills. In the seventeenth century and earlier the midwife could be a "ministering angel," as Anne Hutchinson appeared to be at the time of her arrival in Boston.[37] At the other end of the continuum was the midwife who relied on demonology and witchcraft in her supervision of childbirth. Obviously the latter was anathema to the Puritans. Once Anne Hutchinson fell from favor, accusations of the devil's work tainted her reputation.

Anne Hutchinson's midwifery provided a clear link between the day-to-day life of her neighbors and herself within the larger frame of Puritan theology. The experience of birth in Boston of the 1630s entailed the living-out of religious belief as well as physiological cycle. The unsettling details of the one labor and delivery in particular served as metaphor and symbol for the intense theological dispute of the Antinomian Controversy.

In childbirth we encounter the area where the anatomy of reproduction and the historical specificity of gender overlap. The ritual of childbirth integrates the biological process into a cultural milieu. In many ways, the ritual takes on even greater significance than the birthing activity itself. In the study of childbirth ritual the scholar goes beyond the outline of social and cultural patterns to glimpse women not only in their *social* roles, but in their biological and specifically *sexual* roles as well. The clash between Anne Hutchinson and the powers-that-be in early colonial Boston lays bare a conflict between female-dominated childbirth customs and male-dominated Puritan ideology.

Mary Dyer's premature delivery of a deformed and dead infant occurred just weeks preceding Anne Hutchinson's trial before the General Court on October 17th of 1637. "The Midwife Hawkins" and Anne Hutchinson supervised the event with the presence as well of several other women who were eventually ". . . forced to leave. . ." because of the adverse intensity of the labor.[38] Three women—Hawkins, Hutchinson and a third unidentified individual—were left alone with Mary Dyer.

Both Mary Dyer and Jane Hawkins (and their spouses) belonged to the core of Anne Hutchinson's following in Boston. By this time the tenuous nature of Hutchinson's standing *vis a vis* the ministerial and political hierarchy was evident to the three. At the time of this birth, Mary Dyer was young and bearing her first child. Her challenge to theological orthodoxy was just beginning. She met her end many years later a martyr in the name of the Quakers. Jane Hawkins, on the other hand, was an older woman and the established midwife in Boston before Anne Hutchinson's arrival. Hawkins was never granted membership in the Puritan Church, but some noted in retrospect her adherence to Hutchinson's theological perspective.[39]

Despite Jane Hawkins' exclusion from church membership, Anne Hutchinson worked with her in midwifery. Although Hutchinson's contemporaries did not call her the Midwife, they did characterize her clearly as an assistant during birth. The Midwife Hawkins then was in charge during Mary Dyer's labor. Undoubtedly, Hutchinson went to the Dyer home, several blocks away, as a routine response to the needs of a woman in labor, a woman whom she knew and counselled. Probably Dyer and Hutchinson played complementary roles as they organized and guided the community of women through the ritual and experience of childbirth.

The events of the labor and birth were recreated by Winthrop, using various sources now referred to as "hearsay evidence." Apparently the infant died two hours before its birth, although how this was known is a mystery. Either the women measured the vital signs of the unborn child, or they mistook some quality of the labor itself as a sign of its death. The bed in the lying-in chamber shook and a putrid ordor pervaded the environment. Many of the group began vomiting and children evinced fits. Thus most of the women left the room.[40] Jane Hawkins recalled that the child ". . . came hiplings till she turned it."[41] The fetus had settled into a breech position, causing a difficult labor. The Midwife Hawkins had the considerable skill to reposition the fetus during labor, to perform, in medical parlance, a podalic version. Winthrop described the infant as severely deformed, perhaps anencephalic or lacking a brain. The

child was female and appeared to be covered with scales and bearing talons or claws, as Winthrop saw it, in place of nails.[42]

By the time of the birth, the Antinomian Controversy had begun in earnest. Roughly two weeks previous to the delivery, October 2, 1637, a synod had met to establish agreement and ease the rift opening among the ministers, to reestablish communication between John Wilson and John Cotton and John Wheelwright. Subsequently, in November, Wheelwright, Anne Hutchinson's brother-in-law and religious associate, was banished. Although the birth happened before Anne Hutchinson's appearance in front of the General Court in Newton, Winthrop did not know of the event for five months more. He wrote about the delivery of Mary Dyer much later, after the strenuous examinations of Hutchinson and in the context of her banishment and dismissal from the church. It was from this vantage point that Winthrop attached an aura of devilry to the event, calling it a monstrous birth and a manifestation of Special Providence.

Although the women who attended births commonly were called gossips, in this case the word of the birth did not spread. When questioned (in March of 1638 after her banishment from Massachusetts Bay) Anne Hutchinson described asking John Cotton for advice regarding the burial of the child. He counselled her, she recalled, to bury the body quietly without reporting the event to any other authorities, political or religious.[43] This was the prerogative and obligation of the midwife. Part of her power and authority was to provide a liaison between the lying-in chamber and the governing authorities. John Cotton willingly accepted the responsibility for his role, once confronted by Winthrop for his actions. Winthrop recalled his apology:

> He considered, that, if it had been his own case, he should have desired to have had it concealed. . . . He had known other monstrous births, which had been concealed, and that he thought God might intend only the instruction of the parents and such other to whom it was known . . . .[44]

Besides Cotton's reluctance to publicize the disquieting qualities of Mary Dyer's delivery, the women also kept quiet and manifested a spiritual solidarity with Anne Hutchinson who was on trial before the collective governing male authorities. They appear in retrospect to have been "a communitie of woemen [sic]." The alarming and secret experience of the delivery intensified the solidarity of the women: ". . . The bed whereon the mother lay did shake, and withal there was such a noisome savour, as most of the women were taken with extreme vomiting and purging, so they were

forced to depart. . . ."[45] Even though Winthrop argues that the early departure of these women caused the concealment of the birth, it is much more plausible that, experiencing diverse individual reactions, they nonetheless stood by one another in secrecy until the conclusion of the hearing before the Church of Boston in March of 1638.

Boston in 1637 was a small community with frequent encounters among its inhabitants. The Winthrops and the Hutchinsons shared the same well, for instance, and lived across the street from one another. Networks of neighbors and shared daily activities provided context for communication and shared knowledge. While Winthrop and Hutchinson may not have spoken much, certainly the group of women who attended Mary Dyer in her labor gleaned the details of the outcome of her "travail." The well-kept secret of the birth, especially its concealment from the governing authorities, suggests that the three women attending the birth, Mary Dyer, and the other women knowledgeable as to its details, recognized the pejorative and dangerous connotation that public knowledge of the birth might carry.

Puritan cosmology included an awareness of the natural world and certain inclinations to pursue a Baconian observation and recording of the occurrences in the surrounding environment. Most did not perceive a conflict between the empiricism of Bacon and the rigors of Puritan theology. They recognized instead an opportunity to establish natural laws which would further reveal the hand of God in earthly existence.[46] In the case of childbirth, as in death, however, an implicit contradiction underlay Puritan life. On the one hand, God was the first cause of all happenings, but on the other hand, Puritans did look to the intervention of medical practitioners to treat disease, at least to a limited degree. For example, when Thomas Shephard's wife lost a baby, he recorded in his diary that the ineptitude of the midwife was the cause of the death. Puritanism urged upon him the interpretation of the infant's death as a sign of God and as a message to him and his wife concerning their failings. Still Shepard saw fit to blame the midwife, a perspective similar to our own in which medical practitioners hold a great responsibility for the outcome of a childbirth.[47]

John Cotton first interpreted the misfortunes of the Dyer birth as a providential warning primarily to the parents of the "monster." Winthrop, however, saw the birth as further evidence of the evil of Anne Hutchinson's opinions and "her monstrous errours."[48] Seeing her midwifery as predominantly spiritual, Winthrop easily interpreted the death and malformation of the child as the result of theological heresy. In fact the spiritual and physical life of the stillborn child were so intertwined that he

Quaker Mary Dyer prior to being hanged on Boston Common in 1660. Her support of Anne Hutchinson in the Antinomian Controversy had led to her expulsion from Boston in 1635. (Painting by Howard Pyle reproduced courtesy of the Friends Historical Library, Swarthmore College, Swarthmore, Pennsylvania.)

made no distinctions. Nor did Winthrop articulate a portrayal of the infant as a separate being. Once informed of the birth, the event became tremendously important to Winthrop's judgment of Hutchinson and to his interpretations of the Antinomian Controversy.

Winthrop recorded the story of the disclosure of the birth in his *History of New England:*

> . . . and the child buried, (being stillborn,) and viewed of none but Mrs. Hutchinson and the midwife, one Hawkin's wife . . .; and another woman had a glimpse of it, who, not being able to keep counsel, as the other two did, some rumour began to spread, that the child was a monster. One of the elders, hearing of it, asked Mrs. Hutchinson, when she was ready to depart; whereupon she told how it was. . . .[49]

The elder who confronted Anne Hutchinson with the rumored monster birth threatened her with the examination of the body of the baby if she did not disclose the details. Why he manifested curiosity to see the misshapen infant is enigmatic. Winthrop, however, followed suit. He further threatened Anne Hutchinson "that he intended to have it taken up and viewed."[50] She then offered a description of the infant, but to little avail. It seems that Winthrop was still not satisfied: "With advice of some other of the magistrates and of the elders of Boston, [Governor Winthrop] caused the said monster to be taken up."[51] Of course, the body of the stillborn infant was "much corrupted," but still they found evidence particularly of the horns and claws, which symbolized the presence of a demon.[52] Not only did Winthrop proceed, in the company of "other magistrates and elders" (both religious and political figures) to unearth the remains five months after death, but he included the astounding number of "above a hundred persons" among the spectators.[53]

The relentless investigation of John Winthrop and his fellow citizens reveals important detail in the conflict between Anne Hutchinson and the prevailing authorities. The insistence on viewing the body of the infant came in part from an interest in observing closely the material evidence. His curiosity was empirical in nature, seeking to know the detail and every aspect of such a timely and unusual occurrence. Above all, the intensity of Winthrop's concern about the birth discloses its signficance for him. The birth was closely entangled with the interrogation and examination of Anne Hutchinson. Initially, he was outraged to be excluded from the knowledge of the birth and finally convinced that the unfortunate outcome was merely a providential sign of the heresies of Anne Hutchinson and the poison she spread.

At the same time, the effort to unearth the body was similar to an autopsy. There were, in fact, autopsies done occasionally in England. Common law in the Massachusetts Bay colony held that the bodies of criminals might be used for anatomical study. This law was rare, however, and generally reserved for murderers.[54] That Winthrop would gain the support of other political and religious authorities to examine the corpse before a large public audience reveals the extraordinary passions of the Antinomian Controversy and its connections with the ritual of childbirth.

The repercussions of the concealed birth included immediate restrictions placed on Jane Hawkins, and her ultimate exile from the Massachusetts Bay Colony. When the birth was made public knowledge, Jane Hawkins accepted the responsibility for its aberrations and met the resultant restriction on her medical practice. Before her departure, she was instructed " not to meddle in surgery or physick, drink, plaisters, or oils nor to question matters of religion, except with the elders for satisfaction."[55] Hawkins' punishment discloses an important aspect of colonial childbirth. The midwife had to answer to the community, and if she failed in her responsibilities, she met with punishment.

Winthrop's condemnation of all three women reflected the prevalent seventeenth-century notion that supernatural forces determined the outcome of the birth. Although Winthrop was agitated by the news of the monstrous birth (his wife had suffered numerous failed pregnancies), he resolved his uncertainty by seeing the birth as proof of Divine sanction for his punitive measures against Anne Hutchinson and her followers. He combined his scientific or empirical interest in the physical qualities of the dead infant with an embrace of Puritan theology. The story of the Mary Dyer delivery and the aftermath displays the everyday context and acting out of the social, religious and political conflict of the Antinomian Controversy and in modern parlance, also a medical conflict.

After wintering in exile from her family and from the Boston citizens at the home of Joseph Welde in Roxbury, Anne Hutchinson appeared before the Church of Boston in March of 1638. By now she was tired and brought down by the lengthy proceedings and by her absence from her family and supporters. She had seven children at home, the youngest being Zuriel who was but one year old.[56] She appeared to be pregnant. Thomas Olliver, an elder of the church and a surgeon, spoke for her.

> . . . whereas our Sister Hutchinson was not hear at the Beginninge of this Exercise, it was not out of any Contempt or Neglect to the ordinance, but because she hath bine longe (under) Durance. She is

so weake that she conceaves herselfe not fitt nor able to have bine hear soe longe togeather.[57]

In spite of her infirmity and exhaustion, she appeared before the group of ministers to describe and defend her behavior and her renderings of Puritan theology.

Although she had had the long winter to ponder the events of the previous fall, still she had not been able to talk to anyone about the birth she attended in October. Her concern for the fate of life after death was evident in the questions and opinions she expressed almost immediately.

> Every Man consists of Soul and Body. No *Adam dies not except his soule and Body dye.* And in Hebrews 4 the word is lively in Operation, and devides between *soule and Spirit; Soe than the Spirit that God gives man, returned to God indeed, but the Soule dyes* and That is the spirit Ecclesiastes speakes of, and not of the Soule.
>
> (Luke 19.10)[58]

She sought to make a distinction between spirit, soul and body, arguing that the spirit alone experienced resurrection. This point fell on unsympathetic ears, however. The governor, ministers and elders argued with her that there was no such distinction, particularly between spirit and soul, as it pertained to moral beings. They struggled, it seemed, to grasp her confusion and to set right her erroneous opinions:

> *Governor*: As the Body remaynes an Earthly substance after Dissolution, soe the Soule remaynes a spirituall Substance after the Curse, though we see not what substance it is turned into after Dissolution.
>
> *Mrs. Hutchinson: I thinke the soule to be nothing but Light.*
>
> *Mr. Cotton*: The Sume of her Opinion is that the soules of men by Creation is no other or better than the soules of beastes which dye and *are mortall, but are made immortall* by the Redemption of Christ Jesus. . . .[59]

A few minutes later, she asked, "How doe we *prove that both soule and body are saved?*"[60]

The Reverend John Wilson, the chief antagonist and partner of the governor, declared her opinions "to be dayngerous and damnable and to be no lesse than Sudducisme and Athiisme. . . ." [61] And still the discourse went on. At one point Anne Hutchinson declared, "I doe question whether the same Bodies that dies, shall rise agayne." To which John Davenport retorted that it was "clear that he rayseth us the same Body and not another Body for substance."[62] Not long after, Peter Bulkeley, another Puritan minister, declared that she was dancing around heresies familiar to him as "that foule, groce, filthye and abominable opinion held by Familists, *of the Communitie of Weomen*. (Job 19.25. Philippians 3)" [63]

The language Hutchinson uses leaves little doubt that she was considering on a conscious, or possibily unconscious, level, the fate of the child born in October. Would this child, if touched by the grace of God, lead an immortal existence in its misshapen and horrifying body? Certainly she must not have been inured to a birth such as that of the stillborn child of Mary Dyer. The odds of encountering this type of ill-fitted infant were small.[64] All those who examined her, except Cotton, were ignorant of the birth and could not understand the context for her queries and argument. Cotton by now was withdrawing his support and had grown much more critical of Hutchinson. If he recognized an internal agonizing on Hutchinson's part over the aberrations of the Dyer birth, he could in no way reveal them in public. Perhaps when Hutchinson stayed with him briefly between this session of interrogation and the final meeting they spoke of the monster birth, perhaps not. The other ministers, for the most part, remained angry with her opinions and further convinced of her theological error.

After the trial before the church briefly adjourned, Hutchinson returned to offer a retraction of her erroneous opinions, and to apologize, especially for her behavior towards those ministers with whom she disagreed. Still, however, she denied that she had held mistaken opinions long, only since her winter in Roxbury. She went even further to express her frustrations with language itself and her ability to articulate her beliefs. "*I confes [sic] my Expressions was that way but it was never my Judgment*." [65] Certainly this argument did not impress her "judges." They began to sense the futility of the entire discourse. John Wilson declared "this you say is most dayngerous, for if your Judgment all this while be not altered but only your Expressions, whan your Expressions are soe contrary to the Truth." [66]

The condemnation of Anne Hutchinson as a familist was the symbol of a vile heresy referring back to nonconformist sects prevalent in Europe in the sixteenth and seventeenth centuries. Although Hutchinson herself denied the

association, those ministers who examined her saw the possible link between her beliefs and those of the families as damning and unconscionable. The label familist was the one used by the governing authorities, while the term "antinomian" only appeared in the next decade.[67] Practicing familists, particularly in Holland, were disproportionately women who eschewed marriage and embraced a social structure which gained the name of "the community of women," condoning a form of free love.[68]

For the hierarchy in early colonial Boston, then, "the community of women" was an abominable image. At the same time, to see the parallel between the Hutchinsonians and the familists was to bring order out of chaos for the interrogators. The phrase and the accusation involved allowed them to pinpoint and identify Hutchinson's crime, a task which was otherwise troublesome and confusing. Of course, a community of women did exist at the core of Anne Hutchinson's activities. This community, however, was not familist in origin and, therefore, Hutchinson denied the existence of the community. In this historical period women created a community, as we have seen, in the ritual of childbirth. Women shared with one another the experience of giving birth, the preparations for labor (in the specific instance of the Hutchinson gatherings) and the supervision of birth (i.e., midwifery). The community of women had a felt presence for Hutchinson during her trial and examination since their solidarity in silence protected her from prosecution. Possibly governing authorities, especially the ministers associated with Wilson and Winthrop, felt excluded and cut off from the secrets held by the silent women.

The prescribed limits of gender, most particularly women, provided a focal point throughout the period of interrogation and exile to Roxbury. For instance, one of the most obvious aspects of Anne Hutchinson's heresy was her insubordination as she characterized certain ministers as misguided and ill informed. This charge appeared early in her examination and is ready testimony to the underlying issue of the proper place of women in colonial New England. Members of the General Court admonished Anne Hutchinson for typifying the great part of the ministerial community as operating under a covenant of works, while coveting the powers and sanctification of the covenant of grace for her followers, her sympathizers and her teacher and minister John Cotton. The covenant structure of Puritan New England did not imply equality but rather subordination in a hierarchy. A covenant with God naturally implied inequality in status, and governmental covenants, family covenants and covenants among congregations were no exception. Within the family the wife was covenanted to serve her husband. As in legal contracts reciprocity was specified so that the husband was covenanted to provide love

and protection to his wife and children.[69] The Reverend Hugh Peters declared toward the end of the church proceeding, speaking directly to Hutchinson, ". . . *you have rather bine a Husband than a Wife and a preacher than a Hearer; and a Magistrate than a subject.*"[70] In a similar vein, not long before, Brother Wilson admonished her for ". . . *slightinge of Gods faythfull ministers and contemninge and cryinge downe them as Nobodies.*"[71]

Consciousness of gender differences abounded during Hutchinson's interrogations. Anne Hutchinson and the ministers disagreed sharply in their use of language. Hutchinson appeared to the others to be too powerful, especially among the women. In her conceptualization and wording she seemed to assume an equality for women before God.

Transcripts of these proceedings make it clear that women were at once too strong and too weak, a duality which in many ways parallels the duality of the midwife. Women were more vulnerable to the malfeasance of the Devil because they were characteristically weak and yielding. Anne Hutchinson stood at the other pole for she had stepped out of the bounds of femininity and was too proud and forward. In early Puritan Massachusetts, then, the culture status of women was ill defined.[72] Midwifery coincided with concepts of femininity so that the midwife was a ministering angel, so pure as to be immortal, or the handmaiden of the Devil, so vilified as to be damned.

Anne Hutchinson met exile and excommunication at the end of her interrogations. She was cast out ". . . as a leper."[73] She and her family moved first to Rhode Island. Shortly after her arrival there, she gave birth to a hydatidiform mole, instead of the child which had been expected.[74]

Modern medicine understands this event as a gestational pathology, varying in frequency, but more common among young women in their teens or women over forty. The tumorlike growth which is conceived and born, so to speak, can lead to cancer.[75] Although there is no evidence to reveal the effect of the experience on Hutchinson, there does seem to be a plentiful assortment of comments from Winthrop, who mandated John Clarke, physician and sympathizer with Hutchinson, to describe fully the appearance of the mole. When he set about to write his narrative of the Antinomian Controversy, Winthrop lumped together Hutchinson's mole and Dyer's monster, seeing them both as evidence of God's disapproval of the women.

> Then *God* himselfe was pleased to step in with his casting voice, and brings his owne vote and suffrage from heaven, by testifying his displeasure against their opinions and practises, as clearly as if he

had pointed with his finger, in causing the two fomenting women in the height of the opinions to produce out of their wombs, as before they had out of their braines, such monstrous birth as no chronicle (I thinke) hath hardly ever recorded the like.[76]

In 1638 William Bradford responded to a letter from Winthrop, beginning with "I heard since of a monsterous, and prodigious birth . . .," while Roger Williams wrote ". . . thank you for that sad relation of the monster. . . ."[77] Winthrop saw the hand of the devil in the so-called monster births and wrote to Williams and others to tell the story. For Winthrop these unfortunate pathologies symbolized the entire theological controversy. Even before Hutchinson's accident of birth occurred, the governing powers determined that the vilifying fallacy underneath the conflict was the "abominable" community of women.

The gathering of the community of women began in the meetings in Anne Hutchinson's home, within the context of childbirth and religion. The solidarity of the women grew and the strength of her followers did also. The extension of the gathering to include men further threatened the religious and political hierarchy, yet it was the "communitie of women" which encapsulated fury.

Some have argued that Anne Hutchinson and her followers represented female agitation.[78] Lyle Koehler argues that the "communitie of woemen" dared ". . . to rebel openly against the spiritual and secular status quo."[79] In "The Case of the American Jezebels," Koehler contends that the group of women together threatened the ministry, more than Hutchinson alone. He suggests that their actions in part offered a definition for the female role in the newly forming colony.

The fact remains, however, that the defiant assertion of female rights was not the conscious goal of Anne Hutchinson and her followers. Hutchinson fell into what came to be defined as heretical way with a sincere and overpowering belief in Puritan theology. Supportive testimony to her conviction appears in the course of the trial in 1638 when she clearly could not gain vindication from the Elders. In answer to Peter Bulkeley's charge of familism she protrayed herself as Christ martyred with those around her doubting her religious purity and strength.[80] Thus her identification with theology was complete.

Nonetheless, her activity within the community of women grew out of female-dominated childbirth ritual, all the while fortified by an overwhelming involvement in Puritan theology. Anne Hutchinson took a serious interest in

the spiritual welfare of these women and attempted to give them religious assurance the best way she knew; through spiritual preparation and scriptural study.

In retrospect Mary Dyer's aberrational delivery provides us with important clues to early colonial childbirth and to the social matrix of the Antinomian Controversy. The communal aspect of the ritual had widespread implications not only for the midwife, but for the women in labor and the other attendants as well. They shared an experiential knowledge of a primary rite of passage. What colonial men learned about a particular birth depended upon the communication of the midwife. At the same time, the communal birth lent a solidarity to the women involved and a sharing of tension: a considerable quality in the context of physical uncertainty in the face of possible death and spiritual uncertainty before possible damnation. The Mary Dyer delivery demonstrates as well that Anne Hutchinson was actively involved in midwifery to the extent that her closest colleagues included another midwife who was not permitted membership in the church and a pregnant young woman who later inclined toward radical religious notions. The childbirth ritual cut across theological lines and united women behind its very universality.

At the same time, the Mary Dyer delivery uncovers a tension in seventeenth-century childbirth which was symbolized by the ambiguous status of the midwife. Fear of a natural yet little understood process could turn gratitude and respect into hatred and accusation. Anne Hutchinson initially brought confidence and assurance to childbirth, which attracted a following and a community of women in need of spiritual certainty. During the trial and examination, however, the governor and the ministers, elders, and magistrates did not directly question her midwifery. Rather the terms of the charges vacillated between her challenge to the hierarchy and her erroneous opinions. There was, nonetheless, an underlying conflict between the communal childbirth ritual and Puritan theology, a conflict which found expression in such a phrase as "the communitie of woemen." Anne Hutchinson found cultural power in a ritual surrounding the biological work of women, and consequently threatened profoundly the male-dominated ideological structure of that Puritan community.

This statue of Anne Hutchinson, sculpted in 1911 by Cyrus E. Dallin, stands on the grounds of the State House in Boston. (Photo courtesy of the State Library of Massachusetts, Special Collections.)

NOTES

1. John Winthrop, *A Short Story of the Rise, Reign and Ruine of the Antinomians, Familists and Libertarians* in David D. Hall, ed., *The Antinomian Controversy, 1636-1638: A Documentary History* (Middletown, Conn.: Wesleyan University Press, 1968), 262.

2. *Ibid.*, 263.

3. Clifford Geertz, *Islam Observed: Religious Development in Morocco and Indonesia* (Chicago: University of Chicago Press, 1968) 97.

4. Many scholars have written about the Antinomian Controversy. David Hall edited a well-selected group of documents concerning the conflict in *The Antinomian Controversy*. George Ellis' "Life of Anne Hutchinson, with a Sketch of the Antinomian Controversy in Massachusetts," in Jared Sparks' *American Biography* XVI, 167-376, is useful. See also Charles Francis Adams, *Three Episodes of Massachusetts History: The Settlement of Boston Bay' The Antinomian Controversy, A Study of Church and Two Governments* I & II (Boston: Houghton, Mifflin & Co., 1892). Also John Winthrop's *History of New England from 1630 to 1649*, James Savage, ed., (New York: Arno Press Reprint, 1972). See "The Trial of Mrs. Anne Hutchinson," in *Proceedings of the Massachusetts Historial Society*, 2nd Series, vol. IV (October 1888) pp. 160-191. See Thomas Hutchinson, *The History of the Colony and Province of Massachusetts Bay,* II, edited by Thomas Mayo (Cambridge, Massachusetts: Harvard University Press, 1936). Appendix II contains the Examination of Anne Hutchinson, November, 1637. More recently see Francis J. Bremer, ed., *Anne Hutchinson: Troubler of the Puritan Zion* (Huntington, N.Y.: Robert Krieger Publishing Co., 1981); Emery Battis, *Saints and Sectaries: Anne Hutchinson and the Antinomian Controversy in the Massachusetts Bay Colony* (Chapel Hill: University of North Carolina, 1962). See also William K. B. Stoever, *'A Faire and Easie Way to Heaven': Covenant Theology and Antinomianism in Early Massachusetts* (Middletown, Conn.: Wesleyan University Press, paperback edition, 1988, first edition 1978). Larzer Ziff's *The Career of John Cotton: Puritanism and the American Experience* (Princeton: Princeton University Press, 1962) investigates the issues of the religious controversy. The literature in fact is vast and beyond the scope of a single footnote. Lyle Koehler's "The Case of the American Jezebels: Anne Hutchinson and Female Agitation During the Years of Antinomian Turmoil, 1636-1640," *William and Mary Quarterly 31* (1974) 55-78 is an important

article. Recent articles include James F. Cooper, Jr., "Anne Hutchinson and the 'Lay Rebellion' Against the Clergy," *New England Quarterly 61* (September 1988) 381-397.

5. See Bremer, *Anne Hutchinson*, and Cooper, "'Lay Rebellion.'" Ben Barker-Benfield, "Anne Hutchinson and the Puritan Attitude Toward Women," *Feminist Studies 1* (Fall 1972) 65-96, and Selma Williams, *Divine Rebel: The Life of Anne Marbury Hutchinson* (New York: Holt, Rinehart and Winston, 1981). See also Ann Fairfax Withington and John Schwartz, "The Political Trial of Anne Hutchinson," *New England Quarterly 51* (June 1978) 226-240. These are a few examples of ongoing research in the area.

6. See Michel Foucault, *The Birth of the Clinic: An Archaelogy of Medical Perception* (New York: Pantheon Books, 1973); Larry Dossey, *Space, Time and Medicine* (Boulder: Shambhala Press, 1982); Owsei Temkin, *The Double Face of Janus* (Baltimore: The Johns Hopkins University Press, 1977) and Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution* (New York: Harper and Row, 1980).

7. See for instance Perry Miller, *The New England Mind: The Seventeenth Century* (New York: McMillan Co., 1939, 1961) and Edmund Morgan, "The Case Against Anne Hutchinson," *New England Quarterly* 10 (1937) 635-649. Another example is Darrett Rutman, *Winthrop's Boston: Portrait of a Puritan Town, 1630-1649* (Chapel Hill: University of North Carolina, 1965) and also Koehler's "American Jezebels." Examples of the latter type, medical history include Samuel Abbott Green, *History of Medicine in Massachusetts* (Boston: A. Williams and Co., 1881), John B. Blake, *Public Health in the Town of Boston* (Cambridge: Harvard University Press, 1959) and Harold Speert, *Obstetrics and Gynecology: A History* (Baltimore: Waverly Press, 1980). Some scholarship does attempt to bridge the schism. For instance see Nancy Cott's introduction to the controversy in *Root of Bitterness: Documents of the Social History of American Women* (New York: E. P. Dutton & Co., 1972), Ben Barker-Benfield's "Anne Hutchinson" or my review of Selma Williams' biography in *Sex Roles* (April 1983).

8. Cotton Mather, *Angel of Bethesda* (Barre, Mass.: American Antiquarian Society, 1972). See also his *Magnalia Christi Americana* (New York: Frederick Ungar, 1970). See Richard D. Brown, "The Healing Arts in Colonial and Revolutionary Massachusetts: The Context for Scientific Medicine," in *Medicine in Colonial Massachusetts, 1620-1820* (Boston: Colonial Society of Massachusetts, 1980) vol. 57, 35-47; and Eric Christianson, "Medicine in New England," in Ronald Numbers, ed., *Medicine in the New World* (Knoxville: Univ. of Tenn. Press, 1987), 101-153, and "The Medical Practitioners of Massachusetts, 1630-1800: Patterns of Change and Continuity" in *Medicine in Colonial Massachusetts,* vol. 57.

9. Winthrop, *Short Story,* 206.

10. Catherine Scholten's *Childbearing in American Society* and Laurel Ulrich's *Good Wives: Image and Reality in the Lives of Women in Northern New England,*

1650-1750 (New York: Oxford Univ. Press, 1983) contain some detail on childbirth in the early colonial period. See also Claude Edwin Heaton, M.D., "Obstetrics in Colonial America," in *American Journal of Surgery 45* (July-Sept. 1939), 606-610.

11. Although historians from George Ellis in the 1830s through Charles Francis Adams in the 1890s and the biographers of the 1930s and even further on through Battis and the present day describe Hutchinson's midwifery, Winthrop and Cotton alone provide the meager phrases which simply called her a woman helpful in the time of childbirth.

12. There are several biographies of Hutchinson. Edith Curtis, *Anne Hutchinson: A Biography* (Cambridge: Washburn & Thomas, 1930); Helen Augur, *An American Jezebel: The Life of Anne Hutchinson* (New York: Brentono's, 1930); Winifred Rugg, *Unafraid: A Life of Anne Hutchinson* (Boston: Houghton Mifflin, 1930) appeared for the tricentennial anniversary of the Antinomian Controversy. Williams' *Anne Hutchinson* is a recent biography which reflects extensive research and useful detail of her life in England and the New World. See also David Grayson Allen, *In English Ways; The Movement of Societies and the Transferal of English Local Law and Custom to Massachusetts Bay in the Seventeenth Century* (New York: Norton Paperback, 1982) for explorations of settlement patterns.

13. At the beginning of her appearance before the Church of Boston, March, 1638, Hutchinson sent a note outlining her retractions and opinions. See "Report of the Trial" in Hall, ed., *The Antinomian Controversy.*

14. John Cotton, "The Way of Congregational Churches Cleared," in David D. Hall, ed., *The Antinomian Controversy*, 412.

15. Winthrop, *A Short Story*, 263.

16. Cotton and Winthrop both testify to the skills of midwifery and medicine Hutchinson brought with her. See also Williams' biography. Ronald Numbers' introduction to *Medicine in the New World* expresses current historical interpretation which lays great store by the influence of the Old World on the ways of the New World, in medicine as well as other facets of the past.

17. Adrian Wilson, "Participant or Patient: Seventeenth-Century Childbirth from a Mother's Point of View," in Roy Porter, ed., *Patients and Practitioners: Lay Perceptions of Medicine in Pre-Industrial Society* (Cambridge: Cambridge University, 1985), 129-144. See Ulrich, *Good Wives* and Scholten, *Childbearing.* See also Peter Ruston, "Purification or Social Control? Ideologies of Reproduction and the Churching of Women after Childbirth" in Eva Gomarnikow, David Morgan, June Purvis and Daphne Taylor, eds., *The Public and the Private* (London: Heinemann, 1983) 118-131. Deborah Gorhman's "Birth and History," *Histoire Social-Social History* XVII (Nov. 1984), 383-394, provides valuable insights into the role of the midwife. See also Jane B. Donegan, *Women and Men Midwives: Medicine, Morality, and Misogyny in Early America* (Westport, Conn.: Greenwood Press, 1978) and Richard W. and Dorothy C.

Wertz, *Lying-In: A History of Childbirth in America* (New York: Schocken Books, 1975).

18. See George Gifford, Jr., "Botanic Remedies in Colonial Massachusetts, 1620-1820," in *Medicine in Colonial Massachusetts*, 263-288; George Dow, *Every Day Life in the Massachusetts Bay Colony* (Boston: Society for the Preservation of New England Antiquities, 1935), Dover Reprint, 1988; Maurice Bear Gordon, M.D., *Aesculapius Comes to the Colonies* (Ventnor, N.J.: Ventnor Publishers, 1949). All these sources offer information on the use of herbs during childbirth.

19. See Gifford, "Botanic Remedies" for reference to exchange between colonists and Native Americans. Sources for the possible herbs used include Culpepper and Leighton. The relationship between Hutchinson, her followers and the Indians is another topic which deserves study. Their group was unwilling to fight in the Pequot War, which further goaded Winthrop and also suggests an affinity for interest in the Indians.

20. In *Good Wives* Ulrich suggests possible herbs used during birth. Ann Leighton's *Early American Gardens: For Meate Or Medicine*" (Boston: Houghton Mifflin, 1970) details plants that grew in the New World. *Culpepper's Complete Herbal and English Physician* (Manchester: J. Gleave & Son, 1826) is useful for details of medical application of plants.

22. See Wilson, "Participant or Patient?" and also Rushton, "Purification or Social Control?"

23. See Thomas Rogers Forbes, *The Midwife and the Witch* (New Haven: Yale University Press, 1966). The actual role of New World Puritan midwives in baptism is unknown, although they probably had no such duty. Information on baptism is in Keith Thomas, *Religion and the Decline of Magic* (New York: Charles Scribner and Sons, 1971) and Norman Pettit, *The Heart Prepared: Grace and Conversion in Puritan Spiritual Life* (New Haven: Yale University Press, 1966).

24. See Joseph R. McElrath, Jr., and Allan P. Robb, eds., *The Complete Works of Anne Bradstreet* (Boston: Twayne Publishers, 1981), 179-180. Although the exact date of the writing of this poem is unknown, Bradstreet probably was born in 1612 and died in 1672. The poem was likely written in the 1630s or 1640s. Her father was Thomas Dudley, a governor of the Bay Colony and a contemporary of Winthrop's.

25. See James H. Cassedy, "Church Record-Keeping and Public Health in Early New England," in *Medicine in Colonial Massachusetts,* vol. 57, 249-262, and *Demography in Early America* (Cambridge, Mass.: Harvard University Press, 1969); John B. Blake, "The Early History of Vital Statistics in Massachusetts," *Bulletin of the History of Medicine 29* (1955), 46-54, and *Public Health in the Town of Boston, 1630-1822* (Cambridge, Mass.: Harvard University Press, 1959); John Demos, "Families in Colonial Bristol, R.I.: An Exercise in Historical Demography," *William and Mary Quarterly 25* (1968) 41-57; Maris A. Vinovskis, "Mortality Rates and Trends in Massachusetts before 1860," *Journal of Economic History 32* (1972), 184-213; and

Daniel Scott Smith, "The Estimates of Early American Historical Demographers: Two Steps Forward and One Step Back, What Steps in the Future?" *Historical Methods 12* (Winter 1979), 24-38.

26. See David Stannard, *The Puritan Way of Death: A Study in Religion, Culture, and Social Change* (New York: Oxford University Press, 1977) for one interpretation of death among Puritan children.

27. See Stoever, *"A Faire and Easie Way"* and Norman Pettit, *The Heart Prepared: Grace and Conversion in Puritan Spiritual Life* (New Haven: Yale University Press, 1966) for explorations of preparation among the Puritans.

28. See Cotton Mather "Elizabeth in Her Holy Retirement" (Boston: 1710). Also John Oliver, *A Present for Teeming American Women* (Boston, 1694). These primary sources clearly show the suffering and spiritual anxiety urged upon pregnant women in preparation for childbirth. John Demos, *Entertaining Satan: Witchcraft and the Culture of Early New England* (New York: Oxford University Press, 1982) and Lyle Koehler, *The Search for Power: The Weaker Sex in Seventeenth Century New England* (Urbana: University of Illinois Press, 1980), both explore the tensions and restrictions placed on women in colonial New England.

29. John Cotton, "The Way Cleared," in Hall, ed., *Antinomian Controversy*, 412.

30. The original transcripts appear in the *Proceedings of the Massachusetts Historical Society* IV, 160-191 and Thomas Hutchinson's *History of Colony and Province of Massachuetts Bay II.*

31. "The Trial of Mrs. Anne Hutchinson," in Hall, ed., *Antinomian Controversy*, 336-337.

32. John Cotton's ambivalence is the subject of much scholarship. See for instance, Ziff, *John Cotton* and Stoever, *"A Faire and Easie Way."*

33. "The Trial of Mrs. Anne Hutchinson", in Hall, ed., *Antinomian Controversy*, 265. See Battis, *Saints and Sectaries* and Cooper "Lay Rebellion" for interesting detail of community division and the social make-up of Hutchinson's following.

34. See Winthrop's *History*. See Stoever, *"A Faire and Easie Way"* for clarification and exploration of the theology of Hutchinson and Cotton.

35. Theodore Weld in Winthrop's *Short Story,* in Hall, ed., *Antinomian Controversy,* 212-213.

36. *Ibid.*, 263. See Carol Karlsen, *The Devil in the Shape of a Woman: Witchcraft in Colonial New England* (New York: W.W. Norton, 1987) for a treatment of Hutchinson, Dyer and Hawkins as witches. There are inaccuracies in the chronology of her rendering, unfortunately. Demos' *Entertaining Satan* is an admirable study of many

aspects of witchcraft, downplaying in conclusion the connections between midwifery and witchcraft. The issue of a possible link remains open, and possibly irresolvable. See also Michel Foucault, "Médècins, Juges et Sorciers au XVIIe Siècle" in *Médècine de France 200* (1969), 121-128.

37. See Elizabeth Dexter, *Colonial Women of Affairs* (Boston: Houghton Mifflin Co., 1924), 58. See William Bradford, *Of Plymouth Plantation,* edited by Harvey Wish (New York: Capricorn, 1962).

38. Winthrop, *History*, 263.

39. *Ibid.* See Cotton, "The Way Cleared."

40. *Ibid.*

41. *Ibid.*, 261. See also Jane Donegan, *Women and Men Midwives.*

42. See Gordon, *Aesculapius* and Harold Speert, *Iconographia Gyniatrica* (Philadephia: F.A. Davis, 1973), 75.

43. Winthrop, *History.*

44. Winthrop, *Journal,* 267-268.

45. Winthrop, *History*, 263.

46. For readings on scientific thought and the Puritans, see Charles Webster, *The Great Instauration: Science, Medicine and Reform, 1626-1660* (New York: Holmes and Meyer, 1975); Ronald Numbers, "Science and Religion," *Osiris 1* (1985) 59-80; John B. Blake, *Public Health in the Town of Boston, 1630-1822* (Cambridge: Harvard University Press, 1959); and James Cassedy, *Demography in Early America* (Cambridge: Harvard University Press, 1969).

47. See Thomas Shepard's "Memoir of His Own Life" in Alexander Young, ed., *Chronicles of the First Planters of the Colony of Massachusetts Bay, 1623-1636* (New York: DeCapo Press, 1980 reprint of 1846 original), 555.

48. Winthrop, *A Short Story*, 281.

49. Winthrop, *History*, 261.

50. *Ibid.*

51. *Ibid.*, 263.

52. *Ibid.*

53. Winthrop, *A Short Story*, 282.

54. See Frederick C. Waite, "The Development of Anatomical Laws in the States of New England," *The New England Journal of Medicine 233* (Dec. 13, 1945) 716-726; W.R. Steiner, "Some Early Autopsies in the U.S.," *Johns Hopkins Hospital Bulletin* #149 (August 1903), 201-203; and Bear, *Aesculapius*.

55. From the Massachusetts Bay Colony *Records* I. 219, in James Savage, ed., John Winthrop's *History*, 263n.

56. Williams, *Anne Hutchinson*.

57. "A Report of the Trial," in Hall, ed., *Antinomian Controversy*, 351. See also C. Helen Brock with E. Christianson, "Appendix" in *Medicine in Colonial Massachusetts* for details of Olliver's background as a surgeon.

58. "The Trial," in Hall, ed., *Antinomian Controversy*, 354.

59. *Ibid.*, 356.

60. *Ibid.*, 357.

61. *Ibid.*, 358.

62. *Ibid.*, 361.

63. *Ibid.*, 362.

64. Ambroise Paré's sixteenth century book, *On Monsters and Marvels*, translated by Janis L. Pallister (Chicago: University of Chicago Press, 1982) does not describe an incident of birth such as that of Mary Dyer. Nor does Percival Willoughby (1596-1685) in his *Observations in Midwifery* (Wakefield, England: S.R. Publishers Limited, 1972).

65. "The Trial," 378. See Patricia Caldwell, "The Antinomian Language Controversy," *Harvard Theological Review* (1976), 345-367, for a consideration of language and articulation of self on the part of Anne Hutchinson. See also David Hall, "The Mental World of Samuel Sewall," in Hall et al, eds., *Saints and Revolutionaries: Essays on Early American History* (New York: W.W. Norton, 1984), for discussion of language, emotion and spiritualism among the Puritans.

66. "The Trial," 378.

67. Williams, *Anne Hutchinson*.

68. *Ibid.* See also Stoever, "*A Faire and Easie Way*" and Thoms, "Women and the Civil War Sects," *Past and Present 13* (April 1958), 42-62, for descriptions of Familism.

69. See Lyle Koehler, "The Case of the American Jezebels: Anne Hutchinson and Female Agitation During the Years of Antinomian Turmoil, 1636-1640," *William and Mary Quarterly 31* (1974), 55-78; Mary Maples Dunn, "Saints and Sisters: Congregational and Quaker Women in the Early Colonial Period," and Gerald Moron, "'Sisters in Christ:' Women and Men in Church in Seventeenth-Century New England," both in Janet Wilson James, ed., *Women in American Religion* (Philadelphia: University of Pennsylvania, 1980); Rosemary Skinner Keller, "New England Women: Ideology and Experience in First-Generation Puritanism (1630-1650)," in Rosemary Radford Ruether and Rosemary Skinner Keller, eds., *Women and Religion in America* vol. 2 (San Franciscio: Harper & Row, 1983), 132-192.

70. "Trial of Mrs. Anne Hutchinson," in Hall, ed., *Antinomian Controversy,* 383.

71. *Ibid.*, 380.

72. Mitchell Breitwieser found that Cotton Mather's third wife held a similar position in Puritan New England. See his "Cotton Mather's Crazed Wife," *Glyph* (1979), 88-113. See also Dunn, "Saints and Sisters." John Demos, in *Entertaining Satan,* has gone a long way towards deriving the sources of definitions of womanhood in this period. He suggests a connection between accusations of witchcraft, the experience of menopause among colonial Puritan women and also that of middle age.

73. "The Trial of Mrs. Anne Hutchinson," 388.

74. Dr. Paul Younge first made this diagnosis for Battis in *Saints and Sectaries*. There was, however, earlier recognition of this condition. See Beryl Rowland, tr., *Medieval Woman's Guide to Health: The First English Gynecological Handbook* (Kent, Ohio: Kent State University Press, 1981).

75. See John Sciarra, ed., *Gynecology and Obstetrics*, vol. 4 (Philadelphia: Lippincott Co., 1988); and Martin Pernall and Ralph Benson, *Current Obstetrical and Gynecologic Diagnosis and Treatment* (Sydney, Australia: Appleton & Sage, 1987) for recent medical discussion of gestational trophoblastic neoplasms. This work suggests that the connections between hydatidiform moles and menopause are less clear and direct than the appendix to Battis' *Saints and Sectaries* suggests.

76. Winthrop, *Short Story*, 214.

77. Massachusetts Historical Society, *Winthrop Papers,* vol. IV, 1638-1644 (Boston: Merrymount Press, 1944).

78. See Koehler, "American Jezebels;" Barker-Benfield, "Anne Hutchinson;" and Kammen, *The Devil*, among others.

79. Koehler, "American Jezebels," 59.

80. "The Trial of Mrs. Anne Hutchinson," 353.

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Professor McGregor serves as a member of the history faculty at Sangamon State University, and also teaches courses in the Department of Medical Humanities at Southern Illinois University School of Medicine in Springfield. She currently is completing work on her book, *Sexual Surgery and the Origins of Gynecology: J. Marion Sims, His Hospital, and His Patients*, which will appear in the spring of 1990.

Wallace Fenn, circa 1920. (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

The Fenn and Adolph Papers at the University of Rochester

by Christopher Hoolihan

In an essay entitled "International Relations and Domestic Elites in American Physiology, 1900-1940," [1] Gerald L. Geison has compiled several interesting tables ranking the most productive American physiologists and their institutions in the first half of this century. Basing his lists on the volume of contributions to the *American Journal of Physiology*, Geison ranks the physiology department at the University of Rochester School of Medicine and Dentistry ninth (of ten) in terms of research productivity between 1920 and 1940;[2] and lists four members of the medical school's faculty among the nation's most productive physiologists. They are: George Hoyt Whipple, founding dean of the School of Medicine and winner of the Nobel Prize in 1934; Wallace Fenn, chairman of the Department of Physiology from 1924 to 1959; Edward F. Adolph, a member of the physiology department from 1926 until his death in 1986; and John Murlin, chairman of the Department of Vital Economics from 1917 to 1944, and a pioneer in insulin research.[3]

The History of Medicine Section of the School of Medicine's Edward G. Miner Library is fortunate to hold the papers of three of these individuals: Whipple, Fenn and Adolph. Though George Hoyt Whipple may be the best known Rochesterian in the history of twentieth-century American medicine, he was first and foremost a pathologist, and hence is outside the scope of this essay. Wallace Fenn and Edward Adolph were physiologists who made internationally recognized contributions to their field, and it is their papers in the Archives of the Miner Library with which I am concerned here.

THE PAPERS OF WALLACE O. FENN, 1893-1971

Wallace Osgood Fenn was the first chairman of the Department of Physiology at the University of Rochester School of Medicine and Dentistry, and a department member until his death in 1971. The author of 267 publications, Fenn made pioneer contributions to the fields of muscle metabolism, electrolyte physiology, the physiology of respiration, and the physiological problems of space and undersea environments.

Fenn was born at Lanesboro, Massachusetts, on August 27, 1893. His father was William Wallace Fenn, Bussey Professor of Theology at Harvard and later dean of the Divinity School. Fenn entered Harvard with the intention of following his father into the ministry, but was distracted by the biology lectures of W.J.V. Osterhout, to whom he later wrote, "... you were the first to interest me in physiology and to encourage me to believe that I could make my life work in that area....You certainly rescued me from a life of frustration in the ministry."[4]

After receiving his A.B. from Harvard in 1916, Fenn began his graduate studies, which were interrupted by service in the U.S. Army Sanitary Corps. Following his discharge in 1919, Fenn completed his doctoral thesis and was appointed Instructor in Applied Physiology in the Department of Industrial Hygiene at Harvard Medical School. For three years he assisted Walter B. Cannon in teaching, and worked with C.K. Drinker on the phagocytosis of solid particles by white blood cells.

The Rockefeller Travel Fellowship which Fenn accepted in 1922 took him to the laboratories of A.V. Hill in Manchester and Sir Henry Dale in London. His tenure with Hill was by far the more productive. Fenn was not only Hill's first American student, but became a colleague whose friendship endured until the younger man's death almost fifty years later. It was while working with Hill in 1922 and 1923 that Fenn made his first major contribution to physiology: the definition of the quantitative relation between the heat production of muscles and the work they perform—a phenomenon termed the "Fenn effect" by Hill, and still described half a century later as "...the nearest thing to a law that muscle physiologists have."[5]

While still abroad, Fenn was approached for the chair of physiology at the medical school being established in Rochester, New York. Four years earlier Abraham Flexner had suggested the formation of a medical school to University of Rochester president Rush Rhees and Kodak founder George Eastman. In May of 1921, George Hoyt Whipple was appointed dean, and

began the monumental task of designing and building a medical school-hospital facility, and of recruiting a teaching, research and clinical staff. His first appointment was George Washington Corner (1889-1981) for the chair of anatomy; his final appointment was Wallace Fenn as chairman of the Department of Physiology.

Still under obligation to the Rockefeller Institute, wanted back at Harvard by Cannon, and under consideration for the physiology chair at Vanderbilt, Fenn was approached for the Rochester position (at Whipple's request) by George Corner, who was working with Ernest Starling in London before assuming his duties in Rochester. Under the combined influence of Flexner, Whipple and Corner, Fenn accepted the physiology chair at Rochester in May of 1924, a position he would occupy for the next thirty-five years.

The extent of Wallace Fenn's career at Rochester is clear from the Fenn papers in the Archives of the Miner Library. Though the collection was donated by his widow, Clara Fenn, in 1971,[6] the Fenn papers were not processed until 1988, following construction of the new archives room in the History of Medicine Section. The collection is contained in fifty-eight document boxes and 114 notebooks occupying thirty-six linear feet.

The papers span the period 1915 to 1971, and are divided into six distinct series corresponding to the arrangement of Dr. Fenn's own files: the *General File* (boxes 1-39); *Government & Military Contract Reports* (boxes 40-41; *Laboratory Notebooks and Work Data*, 1915-1927 (boxes 42-44); *Laboratory Notebooks, 1926-1970* (114 notebooks); *Work Data, 1926-1971* (boxes 45-52); and *Lecture Notes* (boxes 53-58).

The largest of the series is the *General File*, which includes individual correspondence; correspondence and records pertaining to Fenn's involvement in foreign and domestic scientific societies; and his activities as a contributor or as a member of the editorial board of various physiological journals. All materials in this file are arranged alphabetically by corporate or personal name, and chronologically under that name.

The personal correspondence is quite extensive, and as might be expected, includes files bearing the names of such figures as Detlev Bronk, Walter B. Cannon, Julius Comroe, Hallowell Davis, Cecil Drinker, Ralph Gerard, A.V. Hill (the most extensive personal correspondence in the series), Arthur Otis, Hermann Rahn, and many others. Along a somewhat different line of interest is Fenn's concern with the fate of Jewish physiologists in the early years of National Socialist rule in Germany. Three files of correspondence (1933-1936)

W. O. Fenn with British physiologist A. V. Hill, taken probably during the latter's visit to Rochester in 1940. (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

record Fenn's efforts on behalf of Ernst Fischer, who spent six months in Fenn's laboratory at Rochester in 1929, and who in May of 1933 was dismissed from the Institut für Animalische Physiologie in Frankfurt because of his Jewish origins.[7]

Of great importance are the organizational files. Ten boxes in the *General File* pertain to Fenn's involvement in the American Physiological Society (1934-1971), in which he served four years as treasurer, four years as secretary, and eleven years on the Board of Publication Trustees before being elected president in 1946. During Fenn's two-year term as president of APS, the president's term was limited to one year, the positions of secretary and treasurer were combined, the fall meeting was instituted, the *Journal of Applied Physiology* was founded, and the American Institute of Biological Sciences (AIBS) was proposed.

Among the many other scientific organizations represented in the *General File* are AIBS, which Fenn was instrumental in founding and of which he was president in 1957-58; the Federation of American Societies for Experimental Biology (FASEB); the International Union of Physiological Sciences (IUPS), for which Fenn chaired the U.S. National Committee (1946-50), and served as Secretary General (1959-65) and President (1968-71); and the National Academy of Sciences.

The next five series in the collection document Wallace Fenn's research activities from 1915 to 1971. The earliest of these materials are contained in the *Laboratory Notebooks & Data, 1915-1927*, which includes notebooks he kept at Manchester University and University College (London) from 1922 to 1924.

Fenn's initial research in Rochester concentrated on measuring gas exchanges by nerve and muscle. In 1927 he measured for the first time the amount of oxygen required by a nerve to conduct an impulse. Similar studies on muscle metabolism led Fenn to consider electrolytes (potassium in particular) in nerve and muscle activity—work which ushered in a new era in electrolyte physiology. During the 1930s, Fenn made the first determinations of potassium, sodium, magnesium and calcium in nerve; developed a new method of determining the internal pH of muscle; showed that intracellular potassium was mobile, not fixed; and "most importantly, showed that during contraction potassium was lost from muscle in exchange for sodium, and that the process was reversed in recovery."[8] With the availability of radioactive potassium in the late 1930s (samples of which he ingested), Fenn was able to

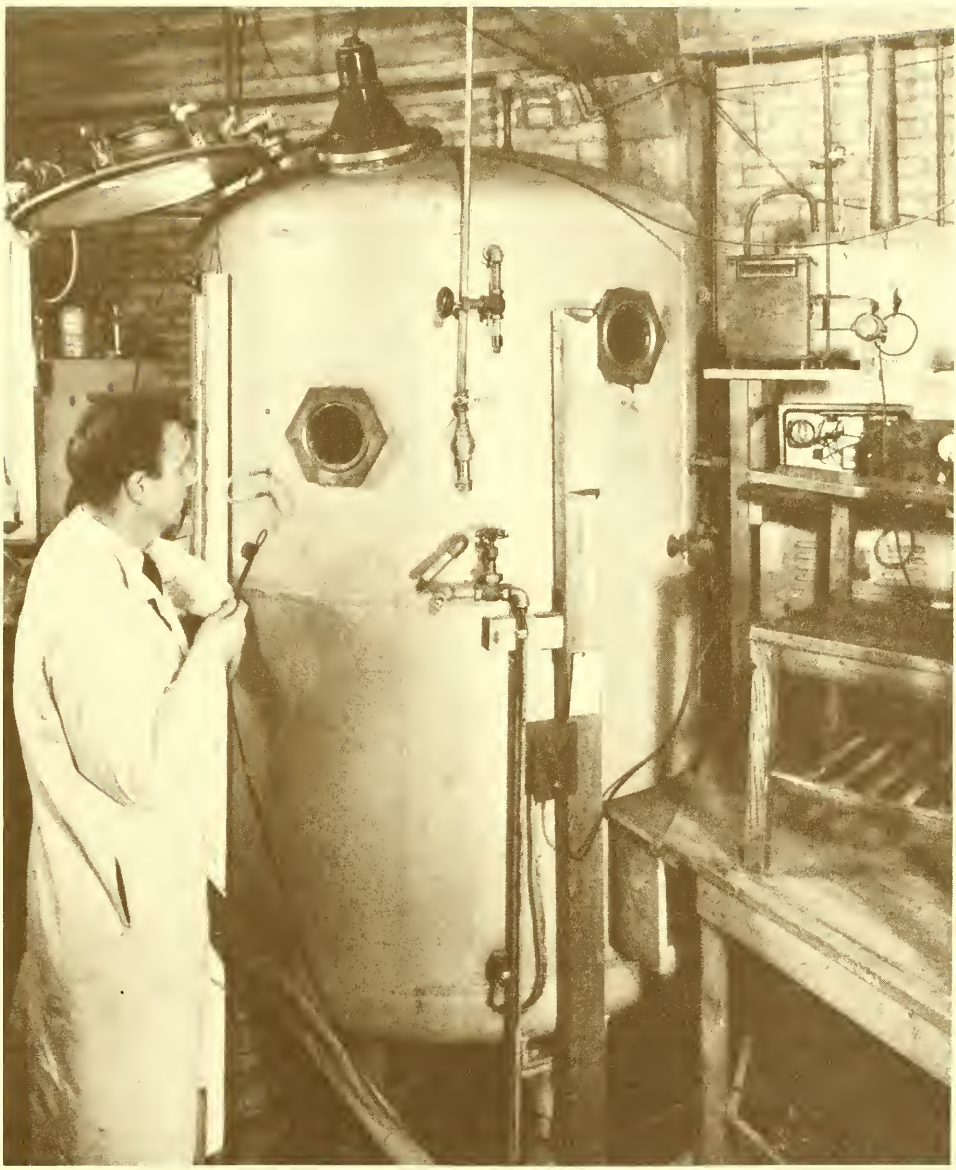
study more closely the kinetics of potassium, and was the first to show the incorporation of potassium in blood cells.

This and the succeeding period of Fenn's research in Rochester is recorded in two parallel series: his *Laboratory Notebooks (1926-1970)* and the *Work Data* files. The 114 pasteboard notebooks in the Fenn collection provide a chronological record of activity in Fenn's laboratory (in various hands) from 1926 until 1970. The notebooks are supplemented by eight boxes of file folders which contain additional experimental data (much of it summarized in the notebooks) and observations. The material in the *Work Data* files are also arranged chronologically.

By the outbreak of World War II, Fenn had made contributions to physiology that would have satisfied the ambitions of most scientists. Hoping to make a contribution to the war effort, however, Fenn turned his attention to respiratory physiology and the problems faced by aviators in non-pressurized aircraft. With no previous experience in the physiology of high altitude respiration, Fenn embarked on a new research career (at age forty-eight) in a largely undeveloped field. Two major concepts emerged from Fenn's work in respiratory mechanics: the pressure-volume diagram of the lung and thorax, and the oxygen-carbon dioxide diagram of the composition of alveolar gas.

His research during this period is recorded in the *Laboratory Notebooks* and *Work Data* files, and also is summarized in the *Government and Military Contract Reports* (boxes 40-41) written for the various government and military agencies that sponsored Fenn's research. These reports continue into the 1950s, during which period Fenn extended his interest in respiration physiology to two new human environments: outer space and the depths of the sea. Of particular importance was his work on the toxicity of oxygen at high pressures and his investigations of the effects of hydraulic pressure on biological reactions.

The final series in the collection (boxes 53-58) represents Fenn's teaching activities at the University of Rochester School of Medicine and Dentistry. It contains notes of lectures delivered over a period of more than forty years arranged alphabetically by subject. Much of this material is contemporary with his research, and complements the laboratory notes and work data of the preceding series.



In order to simulate the conditions of high-altitude respiration, Fenn purchased a steel tank designed to transport beer, which he modified with a vacuum pump borrowed from one of the university's tree spraying machines. This primitive vacuum chamber was able to simulate conditions at 50,000 feet. Dean Whipple forbade Fenn to enter the tank after he learned that his physiology chairman had passed out several times during "flights." (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

THE PAPERS OF EDWARD F. ADOLPH, 1895-1986

In May of 1925, Wallace Fenn began correspondence with Edward Adolph, who at the time was a National Research Council Fellow at Johns Hopkins, and who for two years had been considering offers from various university biology departments. Fenn was hoping to induce Adolph to join him in the physiology department at Rochester. Adolph was reluctant, however, and frankly stated in a letter dated June 14, 1925 that he thought his chances of coming to Rochester were "somewhat less than 50-50." [9] Adolph was not interested in a medical school environment, unless the position allowed him to develop a program of graduate instruction comparable to that in Chicago. At Fenn's urging he at least was willing to visit Rochester, and did so at the end of June. Obviously pleased with what he saw and heard, Adolph wrote Fenn on July 13, "I have just written Dean Whipple to accept the appointment in physiology." He concluded the letter, "Thank you for the persuasion you used to secure my appointment—it proves to me that you are anxious to have me come." [10]

Indeed, Fenn was anxious to have Adolph in Rochester, where, over the next six decades, he would train several generations of physicians and physiologists, and achieve international recognition for his work on physiological regulation and adaptation.

Edward Frederick Adolph was born in Philadelphia on July 5, 1895. He received his A.B. from Harvard in 1916, following which he pursued graduate studies at Yale in chemical physiology and zoology. During the war Adolph served in the hospital laboratories of the U.S. Army Medical Department (1918-1919). Upon returning to Harvard, he completed his doctoral studies under L.J. Henderson, and spent a year at Oxford as a Sheldon Travelling Fellow under J.S. Haldane. Adolph returned to the United States in 1921 to assume his first teaching position as Instructor in Zoology at the University of Pittsburgh (1921-1924). While a National Research Council Fellow at Johns Hopkins from 1924 until 1925, Adolph accepted the position of Assistant Professor of Physiology in the department organized by Wallace Fenn at the University of Rochester School of Medicine and Dentistry.

In April of 1987, four months after Adolph's death, [11] his personal papers were transferred to the Miner Library from the office he had occupied for more than sixty years. Because his files had been so carefully maintained, it was possible to process and inventory the Adolph papers by June of that year. The collection, which spans the period from 1915 to 1986, is contained in sixty-three document boxes and occupies twenty-eight linear feet.

Wallace Fenn in the classroom, circa 1965. (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

The Adolph papers are arranged in five major series: *Correspondence* (boxes 1-8); *Organizations* (boxes 9-15): *Committees, Consultations & Conferences* (boxes 16-19); *Grant Contracts & Reports* (boxes 20-22); and *Work Data* (boxes 24-59).

There are two separate files in the *Correspondence* series. Correspondence prior to 1964 is arranged alphabetically by correspondent. After 1963, Dr. Adolph began to arrange his correspondence chronologically. Thus, the correspondence of individuals who might easily be located in the pre-1964 alphabetical sub-series becomes considerably more difficult to find in the post-1963 chronological sub-series.

Six of the seven boxes in the *Organizations* series are devoted to Adolph's activities in the American Physiological Society. In 1945 Adolph chaired the committee that surveyed members to determine the status and future of American physiology;[12] in 1953 he was elected the Society's twentieth-sixth president; and in the early 1950s organized the Education Committee, with which he was involved for more than a decade.

The series on *Committees, Consultations and Conferences* is self-explanatory, and in Dr. Adolph's office files was integrated with his *Work*

The Department of Physiology of the University of Rochester School of Medicine and Dentistry in 1926. Wallace Fenn is seated front right; Edward Adolph is standing center rear. For the department's first seven years, Fenn and Adolph were its only faculty appointees. (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

Data. As this material is of a very different nature from the research notes among which it was arranged, it was separated into a distinct series. This material is arranged chronologically.

The *Grant Contracts and Reports* series is particularly important in that it describes the funding of Adolph's research from 1923 to 1973, and provides descriptions of its progress in the accompanying reports. The material in this series was also separated from the *Work Data* files in which it was scattered. A review of this series provides a complete history of Dr. Adolph's research, and serves as an introduction to the extensive *Work Data* series.

The *Work Data* series contains research notes, outlines and laboratory data. It also includes limited correspondence pertaining to the work at hand. Adolph arranged his work files in three chronological divisions: research pre-1942, war-related research, and research from the end of World War II. For the most part these series are arranged chronologically, although Dr. Adolph did transfer files of earlier periods when they bore directly on later research.

The *Work Data* files reflect Adolph's life-long investigations into physiological regulation and adaption—areas of interest to which he was directed by his mentors, L.J. Henderson and J.S. Haldane. The first sub-series (1915-42, boxes 24-29) focuses on two areas of research. The first was the regulation of size (i.e., the influence of hereditary and environmental factors on the regulation of body size, growth, variability, etc.). This work culminated in his first monograph, *The Regulation of Size as Illustrated in Unicellular Organisms*, published in 1931. His other major focus of research prior to World War II was the study of water exchange in organs, tissues and cells. This research resulted in the publication of his second book, *Physiological Regulations*, in 1943.

Adolph's well-known research on the problems of water-exchange in humans in desert environments dates from his participation in the Harvard Desert Expedition of 1937. His involvement in this area of research was intensified during World War II as the military became increasingly concerned with problems of water balance in soldiers engaged in desert warfare. The three phases of Adolph's war—related research is reflected in the *Work Data WWII* subseries (boxes 35-39).[13] In 1942 and 1943 Adolph was engaged in studying water metabolism in warm climates in the "desert hot room" of his Rochester laboratory and at various locations in southern California. This work resulted in the publication of perhaps his best known book, *Physiology of Man in the Desert*, which appeared in 1947. In 1943 and 1944 Adolph

extended these studies to the water needs of humans on life rafts in tropical waters, carrying on his research in Rochester and at Elgin Field in Florida. In 1945 Adolph began to study the effects of exposure to cold air on the human body. These experiments were conducted on the roof of the medical school building using as subjects conscientious objectors from the Civilian Public Service Group.

The final eighteen boxes in the *Work Data* series pertain to Adolph's post-war research, during which he continued his investigations into the regulation of body temperature and water metabolism. He also began studies on the ontogeny of regulatory functions, which are summarized in his final monograph, *Origins of Physiological Regulations*, published in 1968.

Sixty-five years after Wallace Fenn and Edward Adolph came to Rochester, their influence is still felt in the contributions they made to the science of physiology and in the foundations they laid for physiological investigation and education at the University of Rochester. The Miner Library is fortunate to be the repository for the papers of these two eminent scientists. Whether taken together or individually, the Fenn and Adolph collections in the History of Medicine Section are an invaluable resource in the history of twentieth-century American physiology.

Edward Adolph in the early 1960s. (Photo courtesy of Edward G. Miner Library, University of Rochester Medical Center.)

Notes

1. *Physiology in the American Context*, G.L. Geison, ed. (Bethesda: American Physiological Society, 1987), 115-154.

2. *Ibid.*, 136.

3. *Ibid.*, 128.

4. Letter written to Osterhout on the occasion of his eightieth birthday, dated July 24, 1951. Fenn papers, box 31, folder 1.

5. Hermann Rahn, "Wallace O. Fenn," *The Physiologist 19*(1976):4.

6. Fenn died in Rochester on September 20, 1971.

7. Fenn papers, box 17, folders 5-7.

8. Rahn, "Fenn," 4.

9. Fenn papers, box 1, folder 13.

10. *Ibid.*

11. Adolph died in Rochester on December 15, 1986.

12. See E.F. Adolph's "Physiology in North America, 1945," *Federation Proceedings* 3(1946): 407-436.

13. For a detailed chronology and summary of Adolph's wartime research, see E.F. Adolph's own outlines in the Adolph papers, box 35, folder 1.

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Exterior of Crawford Long Museum after renovation in 1979. (Photo courtesy of Crawford W. Long Museum.)

The Crawford W. Long Museum

by Susan B. Deaver

The Crawford W. Long Museum in Jefferson, Georgia, has provided information for thousands of visitors about the humble country doctor who is credited with the discovery of anesthesia—one of the most important advances in modern medicine. Long's story is not merely one of gifted insight; rather, it is one of courage and dedication to the promotion of health and relief from pain.

Crawford Williamson Long was born on November 1, 1815 in Danielsville, Georgia, to a prominent Madison County family. Both of his grandfathers had been soldiers in the Revolutionary War who settled in Georgia after peace was declared. James Long—a planter, merchant and state senator—named his first-born son after a close friend, noted Georgia statesman William H. Crawford. The young Long was reared in a cultured and refined household along with one brother and two sisters.

After graduating from the local academy at the age of fourteen, Crawford Long attended Franklin College (now the University of Georgia), receiving an A.M. degree in 1835. He then began his study of medicine with a preceptor, Dr. George Grant, in nearby Jefferson. Long's medical education continued at Transylvania University in Kentucky and at the University of Pennsylvania in Philadelphia, from which he was granted a medical degree in 1839. After a period of almost eighteen months spent "walking the hospitals" in New York City, the young doctor returned home to Georgia—a well-trained physician and a skilled surgeon.

Dr. Long settled in Jefferson, purchasing the property and practice of his former preceptor, who was moving to Tennessee. Soon his office became a popular gathering place for the young men of the area. Asked to provide some nitrous oxide, or "laughing gas," Long replied that he had no apparatus for preparing or preserving the gas, but had a medicine (sulphuric ether) which would produce equally exhilarating effects. Thereafter, ether frolics were commonplace in Jefferson and the surrounding area.

Observing in others as well as in himself that accidents occurring while under the effects of ether appeared to be painless, Dr. Long reasoned that sulphuric ether could allay the pain of surgery. The opportunity to test his theory came when James Venable requested the removal of a cyst from his neck. This operation, performed on March 30, 1842, was undeniably a success—Venable was given ether on a towel to inhale during the procedure, and afterwards reported feeling no pain. Thus, anesthesia was discovered.

The second painless operation occurred several months later when Crawford Long removed another cyst from James Venable's neck. By the time Long read about the public demonstration of ether anesthesia which took place in Boston in October of 1846, he had performed six other operations. Long made no secret of his work; all of his surgeries were witnessed, and known of by the physicians in the area. Throughout his forty-year medical career, Long continued to use ether anesthesia in his practice for minor surgeries, amputations, childbirth, as well as any major operation he performed.

Long married Mary Caroline Swain a few months after the landmark operation, and they resided in a home next to his office. Five children were born before they decided in 1850 to move to Atlanta, hoping the new town would afford Long a larger practice. The next year, however, they moved again to Athens, to be closer to family and friends.

Long entered into partnership with his brother, also a physician, and they operated a drugstore on Broad Street across from the college campus. Long returned often to Jefferson to treat friends and relatives, or to tend to matters relating to his farms in the county. Long's death occurred while he was attending a patient on June 16, 1878, and he is buried along with his wife in Oconee Cemetery in Athens.

Medical history indeed was made in the small town of Jefferson in March of 1842. Long took no immediate steps to publicize his discovery, however, preferring to experiment until he was convinced of ether's anesthetic properties. Acknowledgment of his achievement has been overshadowed by

the controversy brought about by the claims of Horace Wells, William T.G. Morton and Charles Jackson, who each sought credit for anesthesia's discovery. Ultimately, the weight of evidence, especially the affidavits secured from former patients and witnesses, has swayed the verdict of history in Long's favor.

Commemorating Dr. Long's contribution to medical science has taken many forms. Georgia citizens chose him as one of two representatives for Statuary Hall in Washington, D.C., where his statue was unveiled in 1926. The first-day-of-issue celebration was attended by thousands in Jefferson when a two-cent commemorative stamp was released in 1940. Again and again, in his home state and country as well as abroad, resolutions and addresses have been given; portraits, statues and monuments have been dedicated; all proclaiming Long as the first discoverer of anesthesia.

Always in the forefront of the battle to secure rightful recognition for their former resident have been Jefferson citizens. Nowhere can their commitment be recognized better than in the Crawford W. Long Museum. Interest in establishing a museum on what was believed to be the site of Long's former office become active in 1951. A local committee was formed which raised half the purchase price of the two-story brick building. The Georgia Historical Commission matched the amount and the structure was secured in 1952. Restoration work was begun in that year with funding by Governor Herman Talmadge, and was completed in the autumn of 1957 with further grants by Governor Marvin Griffin.

The Crawford W. Long Memorial Museum opened to the public on September 15, 1957, with photostatic copies of the documentary proof for Long's priority of discovery and personal items of Dr. and Mrs. Long on display, complemented by a diorama of the historic operation. The second floor exhibits provided a chronological story of the conquest of pain, with illustrated texts and some of the tools of ancient and modern anesthesia.

In 1973 the Georgia Historical Commission decided to close the facility and was preparing to haul the contents to Atlanta when the townspeople of Jefferson rallied. They persuaded the governor to deed ownership of the building to the city, and allow local citizens to operate the museum, which they renamed the Crawford W. Long Medical Museum. Several years later, much needed financial support was obtained through the efforts of Atlanta anesthesiologists, who effected a system for regular contributions to be made from the Georgia Society of Anesthesiologists and the Medical Association of Georgia. Monies from these groups was instrumental in funding the

refurbishing and complete redesign of exhibits, which took place in 1979 under the direction of Dr. Patsy Gerstner from the Howard Dittrick Museum of Historical Medicine.

Since the 1950s the Long Museum Association had wished to utilize both buildings adjacent to the museum, especially the antebellum store structure. This dream became a reality as a result of an extensive project begun the spring of 1986, and completed in October of 1987, with an open house held on January 30, 1988. Local citizens continued their longstanding commitment by contributing over $40,000 towards the total cost of $200,000 for the project.

The expansion involved the incorporation of buildings on either side of the original museum, rehabilitation of the three structures, and the creation of new exhibits and displays. The Long Museum now consists of the original 1879 brick building, an 1858 frame Greek Revival store structure, and a one-story twentieth-century commercial building, formerly a doctor's office. In April, 1988, the museum was recognized by the Georgia Trust for Historic Preservation with an Outstanding Restoration Project Award.

The Long Museum expansion has allowed the entrance building to serve numerous purposes. It has gallery space, the offices for the museum complex, an archival "vault" which is temperature and humidity controlled, and a library/research/conference room. This building also serves as the headquarters for the Jackson County Historical Society, and as the repository for their photographs, documents, books and research. Currently on display in the gallery space is an overview of county history using historic photographs and artifacts.

Two new exhibit areas in the antebellum building are in the process of being completed. One is an 1840s doctor's office and apothecary shop and the other a nineteenth-century general store. These exhibits should serve to introduce visitors to the ways in which medicine was practiced at the time of Long's discovery, and also recreate the kind of general store atmosphere where Crawford Long could have shopped while living in Jefferson. Medical and pharmaceutical artifacts reflecting a typical piedmont Georgia practice in the 1840s are still being sought, even though some items have been donated on loan from the Smithsonian Institute. Future plans call for exhibits on other aspects of life in Jefferson in the 1840s.

In the original museum building, the redesigned exhibits continue to focus on interpreting Crawford W. Long's life story and the development of anesthesia. The focal point is still the highly detailed diorama depicting the

Taken in 1957, this original museum display shows the diorama. (Photo courtesy of Crawford W. Long Museum.)

first painless operation. Exhibits previously on the second floor illustrating the development of modern anesthesia were moved downstairs and are presented in a different format. Moveable display cases, located throughout the three buildings, hold temporary exhibits created with items from the collection or on loan, reflecting special events or themes. Funding for the museum comes from visitor donations, the city of Jefferson, the Medical Association of Georgia, the Georgia Society of Anesthesiology, and other money raised by the Crawford W. Long Museum Association.

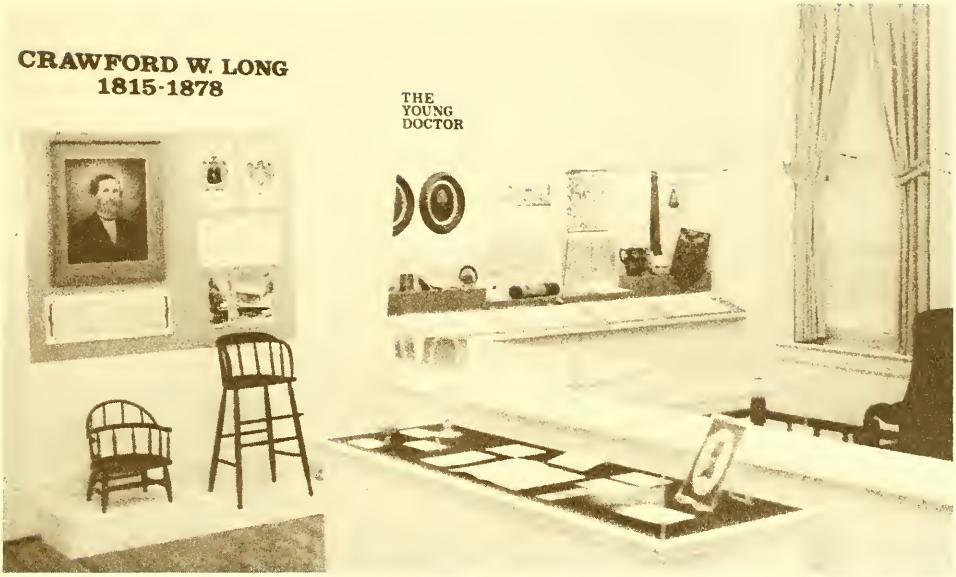
After working as the researcher for the expansion project, I was hired as the Director in January, 1988. My responsibilities include the day-to-day operation of the museum complex, researching and setting up new exhibits, and creating a library and archives with the documents, books, photographs, etc., owned by both the Crawford W. Long Museum and the Jackson County Historical Society.

The renovated museum and its two adjoining buildings serve as a community resource for those interested in Dr. Long's noteworthy contributions, medicine of the period, local history, genealogy and historic preservation. Civic groups frequently hold their meetings here, groups of students of all ages come for a tour, and the public is invited to special programs throughout the year. Two week-long events are held annually to feature aspects of Crawford Long's life and achievement: the last week in March ("Discovery Week") and the first week in November ("Crawford W. Long Days").

Visitation has almost doubled since the expansion, with tourists coming not only from Georgia, but from thirty other states and eight foreign countries so far this year. The museum and its artifacts are indeed a tribute to the memory of one of Georgia's finest citizens.

AUTHOR

Susan B. Deaver has held the position of Director of the Crawford W. Long Museum for the past two years. She was hired initially by the Crawford W. Long Museum Association in March of 1986 to research and develop exhibits for the expanded museum. She has a master's degree in heritage preservation from Georgia State University in Atlanta, and also holds a master's degree in education.



Crawford W. Long exhibit after 1987 renovation. Narrow case in front holds items of special interest, including Crawford Long's goblet (on loan from the Smithsonian); memorabilia from Stamp Day, 1940; a silhouette of Crawford W. Long from Hargrette Rare Book Library, University of Georgia at Athens. (Photo courtesy of Crawford W. Long Museum.)

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Fig. 1. The patient of Dr. Gamgee as recovered from his hip amputation. An early use of medical illustration with photographs, this picture is composed as if it were a formal portrait. (From J. Sampson Gamgee, A Successful Case of Amputation at the Hip-Joint. *London: Churchill, 1865. Photo courtesy of the Dittrick Museum.)*

EXHIBITS

by Nora O'Sullivan

A special exhibit on "Photography in Medicine: 1840-1920" opened at the Dittrick Museum last year in conjunction with the annual Anton and Rose Zverina Lecture. The featured speaker was Daniel M. Fox, M.D., whose lecture, "Chronic Disease and the Politics of Health Care," explored the perceptions of health affairs in this country during the last fifty years and the ways in which chronic disease is visualized.

Dr. Fox has been particularly interested in photography and medicine, and in fact is co-author with Christopher Lawrence of a recent book, *Photographing Medicine, Images and Power in Britain and America since 1840.* The exhibit at the Dittrick investigated the themes of Dr. Fox's work, including some of the mechanical aspects of photography as it developed into a valuable resource for the medical community.

Visitors to the exhibit were able to study several forms of photography which evolved from the daguerreotype: the ambrotype, tintype and the albumen-paper prints. From these rather humble examples grew the incredibly varied and sophisticated photographic techniques used today in the field of medicine.

On display also were examples of early medical texts that contain photographic images as illustrations, including the first such publication known, Dr. Alfred Donne's *Cours de Microscopie Complementaire des Études Medicales* (Paris: J.B. Bailliere, 1844). Pioneer works in photomicrography from both published and unpublished works from the mid-nineteenth century were exhibited as well, an indication that in the laboratory and in the classroom, the camera became an immediate and permanent fixture.

Photography was also put to use as documentary evidence. In his *History of a Successful Case of Amputation at the Hip-Joint* (London: Churchill, 1865),

surgeon J. Sampson Gamgee, M.D., used before and after photographs of patients (Fig. 1).

In another example, Cleveland area physician Homer J. Hartzell documented the 1903 smallpox epidemic at the city pesthouse (Fig. 2). Although they were nearly forty years apart in their work, Gamgee and Hartzell illustrate the natural use for photography in recording pathological conditions.

Fig. 2. Small pox victim at the city "pesthouse," Cleveland, 1903. Taken by Cleveland physician Dr. Homer J. Hartzell, who wished to "document an unusual experience in clinical medicine," this photograph exemplifies the move away from "art" poses for patients toward clinical poses focused on the illness. (Photo courtesy of the Dittrick Museum.)

The exhibit also featured different photographs of physicians, nurses, dentists and pharmacists which had been taken over a period from 1840 to 1920. Over this time the image of the physician changed from that of a formal portrait (1860), to semi-formal poses in the workplace (1905), to the now familiar illustration of the physician actually curing (1920). Two exceptions to theis rule in the developing image of the health care professional appeared in the Dittrick exhibit in the form of early formal portraits of a doctor and a pharmacist posed in the activity of their respective professions (Figs. 3,4).

A small section of the exhibit was focused on military medicine as it was captured on film in the Civil War and World War I. Underscoring the theme of the artistic, social and technological changes in photographing medicine were

the images of physicians and their workplaces, as they differed in these two wars. As they responded to the devastation of war, physicians were captured by the camera in timeless images of service to their country.

While Dittrick Museum artifacts and an extensive picture collection provided the larger part of the items included in the exhibit, several pieces of memorabilia were provided by local collector William P. Schultz, M.D.

Fig. 3. "Taking the Patient's Pulse," ca. 1860. (Photo courtesy of William P. Schultz, M.D.)

Fig. 4. "Pharmacist with mortar and pestle," ca. 1865. (Photo courtesy of William P. Schultz, M.D.)

THE MEDICAL MUSEUMS ASSOCIATION

The Medical Museums Association (MeMA) is an organization of persons working in institutions with collections of medical artifacts. Members include directors of museums, curators, registrars, archivists, librarians, and collectors of common concern, including identification and documentation of artifacts, subject matter classification, collection development policies, conservation, exhibition, and other issues bearing upon the care and use of medical artifacts.

MeMA's origins date to late 1984 and were inspired in part by the formation in 1983 of the European Association of Museums of History of Medical Sciences. Since distance, time, and expense precluded much active involvement of North Americans in that organization, it seemed fitting to create a sister association on this side of the Atlantic. To this end, Patsy Gerstner and James Edmonson canvassed medical museum colleagues and they received an enthusiastic response. After an organizational meeting in 1985 in Raleigh-Durham, North Carolina, the first regular meeting of MeMA occurred in May, 1986 at Rochester, New York. Since then MeMA has met each spring during the annual meetings of the American Association of the History of Medicine; members are also kept informed of topics of shared interest through the pages of *Prescription*, newsletter of MeMA.

Categories of MeMA membership and annual dues are:
Professional $15.00
Associate $15.00
Student $10.00

Membership inquiries may be addressed to:
James M. Edmonson, President
Dittrick Museum of Medical History
11000 Euclid Avenue
Cleveland, Ohio 44106

The next regular gathering of MeMA will be on May 11, 1990 in Baltimore, Maryland, during the American Association of the History of Medicine annual meeting.

News and information for inclusion in Prescription *may be addressed to:*
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3000 W. Washington Street
Indianapolis, Indiana 46222

Presidents of MeMA:

1986	*Patsy A. Gerstner*, Dittrick Museum of Medical History
1987-88	*Michael Harris*, Division of Medical Sciences, National Museum of American History
1989-90	*James M. Edmonson*, Dittrick Museum of Medical History

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